

LONDON  
SCHOOL of  
HYGIENE  
& TROPICAL  
MEDICINE



LSHTM Research Online

Srithamrongsawat, S; (2005) Financial protection and enabling access to care for Thai elderly: the role of public insurance. PhD thesis, London School of Hygiene & Tropical Medicine. DOI: <https://doi.org/10.17037/PUBS.04646522>

Downloaded from: <https://researchonline.lshtm.ac.uk/id/eprint/4646522/>

DOI: <https://doi.org/10.17037/PUBS.04646522>

**Usage Guidelines:**

Please refer to usage guidelines at <https://researchonline.lshtm.ac.uk/policies.html> or alternatively contact [researchonline@lshtm.ac.uk](mailto:researchonline@lshtm.ac.uk).

Available under license. To note, 3rd party material is not necessarily covered under this license: <http://creativecommons.org/licenses/by-nc-nd/3.0/>

<https://researchonline.lshtm.ac.uk>

# **FINANCIAL PROTECTION AND ENABLING ACCESS TO CARE FOR THAI ELDERLY: THE ROLE OF PUBLIC INSURANCE**

**SAMRIT SRITHAMRONGSAWAT**

Thesis submitted to the University of London

For the Degree of Doctor of Philosophy

Health Policy Unit,

Department of Public Health and Policy

London School of Hygiene & Tropical Medicine



April 2005



**BEST COPY AVAILABLE.**

**VARIABLE PRINT QUALITY**

## ABSTRACT

Improvement of health status and increased access to modern medical care among Thai elderly was apparent during the 1990s. Various factors explained this including improved socioeconomic conditions, availability of services, improved physical access, and expansion of health insurance. Nevertheless, differences in health status and access to care have persisted across socioeconomic groups and geographical areas. Despite the policy of free medical care for the elderly launched in Thailand in 1992, a substantial number of elderly were still uninsured in 2001, mainly among those residing in urban areas. In 2002, a universal coverage (UC) policy was introduced, to include the approximately 18 million Thais not covered by formal public insurance schemes. The UC scheme is tax funded, with a budget allocated to each province according to the number of beneficiaries (who must register for a UC card and at a primary health care unit).

The aim of the study was to assess how effectively the UC scheme has been implemented, and performed the functions of financial protection and enabling access to care for the elderly across all socioeconomic groups and urban and rural geographical areas. Both quantitative and qualitative approaches were employed: document review, cross-sectional household survey, in-depth interviews, and focus group discussions. The study site was Yasothon province, one of the poorest provinces in the Northeast of Thailand.

The main constraints in UC policy implementation included lack of appropriate health personnel to provide care in primary care units and lack of management capabilities in purchasing services. Registration of beneficiaries was almost 100%. Access to overall ambulatory care was quite equitable and was solely determined by health need. However, less emphasis was placed on services specific to the needs of the elderly. For hospitalization, urban respondents were admitted more frequently than rural respondents. Take-up of UC benefits was high among cardholding beneficiaries especially for hospitalization. A gradient of burden of out-of-pocket payment across income groups existed, due to the relatively high illness amongst the poor, their extremely low income, and the burden of non-medical expenditure. A few individuals experienced catastrophic payments as a result of non medical care expenditure, noncompliance with the requirements

for accessing free care, and informal payments. The study concluded that the UC scheme was quite successful in its implementation; however, inequity in out-of-pocket payment remained and income inequity itself played a substantial role. To improve equity of access and financial protection, attention should be paid to primary geriatric care, non-medical care expenditure and physical access, insurance management and human resources, and the broader policy context relating to income inequity.

# TABLE OF CONTENTS

ABSTRACT.....	2
TABLE OF CONTENTS.....	4
LIST OF TABLES.....	10
LIST OF FIGURES.....	13
LIST OF FIGURES.....	13
ACKNOWLEDGEMENTS.....	15
DEDICATION.....	16
ABBREVIATIONS.....	17
CHAPTER 1: INTRODUCTION.....	19
1.1 BACKGROUND.....	19
1.2 UNIVERSAL HEALTH COVERAGE FOR OLDER PEOPLE: THE ROLE OF INSURANCE.....	20
1.3 UNIVERSAL HEALTH COVERAGE FOR THAI ELDERLY: THE ROLE OF INSURANCE.....	20
1.4 KNOWLEDGE GAPS.....	22
1.5 PURPOSE AND CONTENTS OF THESIS.....	23
1.5.1 Purpose.....	23
1.5.2 Contents of thesis.....	24
CHAPTER 2: LITERATURE REVIEW.....	26
2.1 INTRODUCTION.....	26
2.2 <u>AGING POPULATION</u> , HEALTH, WELL-BEING, AND HEALTH CARE IN OLD AGE.....	26
2.2.1 <i>Aging population</i> .....	26
2.2.2 <i>Health in old age</i> .....	29
2.2.3 <i>Living arrangements and support</i> .....	31
2.2.4 <i>Health care and use of health services among older people</i> .....	33
2.2.4.1 Health services for older people.....	33
2.2.4.2 Use of health services among older people.....	35
2.3 THE ROLE OF HEALTH INSURANCE.....	39
2.3.1 <i>Universal Coverage: Enhancing the functions of insurance</i> .....	39
2.3.2 <i>Universal health coverage for older people</i> .....	44
2.3.3 <i>Universal health coverage: Enabling equitable access to care</i> .....	49
2.3.3.1 Defining equity in access to health care.....	49
2.3.3.2 Testing for and measuring equity of access.....	51

2.3.3.3 Empirical evidence on equity of access .....	51
2.3.4 <i>Universal coverage: Financial protection</i> .....	57
2.3.4.1 Defining fairness of health care financing .....	57
2.3.4.2 Measuring progressivity in the finance of health care and catastrophic expenditure .....	58
2.3.4.3 Empirical evidence on fairness of health care financing .....	60
2.4 CONCLUSION .....	63
<b>CHAPTER 3: THE HEALTH CARE SYSTEM FOR THAI ELDERLY .....</b>	<b>65</b>
3.1 INTRODUCTION.....	65
3.1 COUNTRY BACKGROUND.....	65
3.1.1 <i>Socioeconomic development</i> .....	65
3.1.2 <i>Population aging in Thailand</i> .....	68
3.2 HEALTH CARE SYSTEM FOR THAI ELDERLY .....	69
3.2.1 <i>Health services delivery system</i> .....	70
3.2.2 <i>Health insurance for the elderly</i> .....	73
3.3 ACCESS TO AND USE OF HEALTH SERVICES AMONG THAI ELDERLY .....	76
3.4 UNIVERSAL HEALTH CARE COVERAGE SCHEME.....	81
3.5 ACCURACY OF DATA .....	86
3.6 SUMMARY .....	87
<b>CHAPTER 4: OBJECTIVES AND METHODOLOGY .....</b>	<b>89</b>
4.1 AIM AND OBJECTIVES .....	89
4.1.1 <i>Aim</i> .....	89
4.1.2 <i>Objectives</i> .....	89
4.1.3 <i>Development of methodology</i> .....	90
4.1.4 <i>Definition of terms</i> .....	93
4.2 STUDY SETTING .....	94
4.3 METHODOLOGY .....	97
4.3.1 <i>Document review</i> .....	98
4.3.2 <i>Cross-sectional household interview survey</i> .....	98
4.3.3 <i>In-depth interviews and focus group discussions</i> .....	108
4.3.4 <i>Case studies of catastrophic expenditure</i> .....	111
4.4 LIMITATIONS OF THE STUDY.....	112
<b>CHAPTER 5: UC POLICY IMPLEMENTATION.....</b>	<b>113</b>
5.1 INTRODUCTION.....	113
5.2 METHODOLOGY .....	113
5.3 RESULTS .....	115
5.3.1 <i>Providing universal health coverage for the elderly</i> .....	115

5.3.1.1 Attitude towards the policy .....	115
5.3.1.2 Policy implementation and constraints .....	117
5.3.1.3 Impacts on providers and their responses .....	118
5.3.1.4 Implications for the elderly .....	120
5.3.2 Budget Allocation and Provider Payment .....	122
5.3.2.1 Attitude towards the policy .....	122
5.3.2.2 Policy implementation and constraints .....	124
5.3.2.3 Impacts on providers and their responses .....	126
5.3.2.4 Implications for the elderly .....	132
5.3.3 Service Delivery System: Establishment of PCU .....	133
5.3.3.1 Attitude towards the policy .....	133
5.3.3.2 Policy implementation and constraints .....	135
5.3.3.3 Impacts on providers and their responses .....	136
5.3.3.4 Implications for the elderly .....	139
5.4 DISCUSSION .....	139
5.5 CONCLUSION .....	150
<b>CHAPTER 6: SERVICE UTILIZATION .....</b>	<b>152</b>
6.1 INTRODUCTION .....	152
6.2 METHODOLOGY .....	152
6.3 RESULTS .....	158
6.3.1 Individual and household characteristics .....	158
6.3.2 Illness among older people .....	159
6.3.2.1 Presence of chronic condition .....	159
6.3.2.2 Illness or injury in the previous month .....	160
6.3.3 Service utilization and take-up of UC benefit .....	162
6.3.3.1 Use of ambulatory care and take-up of UC benefit .....	162
6.3.3.2 Hospitalization in the previous year .....	167
6.3.4 Factors explaining service utilization and take-up of UC benefit .....	169
6.3.4.1 Factors explaining use of ambulatory care in the previous month .....	169
6.3.4.2 Factors explaining hospitalization in the previous year .....	171
6.4 DISCUSSION .....	173
6.5 CONCLUSION .....	178
<b>CHAPTER 7: EQUITY OF OUT-OF-POCKET PAYMENT .....</b>	<b>180</b>
7.1 INTRODUCTION .....	180
7.2 METHODOLOGY .....	180
7.3 RESULTS .....	181
7.3.1 Individual and household characteristics .....	181
7.3.2 Mean expenditure on ambulatory care and hospitalization by income quintile .....	182

7.3.2.1 Mean expenditure on ambulatory care in the previous month by income quintile .....	183
7.3.2.2 Mean expenditure on hospitalization in the previous year by income quintile .....	184
7.3.3 <i>Distribution of burden of expenditure by income quintile</i> .....	185
7.3.3.1 Burden of expenditure on ambulatory care in the previous month .....	185
7.3.3.2 Burden of expenditure on hospitalization in the previous year .....	186
7.3.4 <i>Equity of total out-of-pocket payment in the previous year by income quintile</i> .....	188
7.4 DISCUSSION .....	189
7.5 CONCLUSION .....	195
<b>CHAPTER 8: CATASTROPHIC HEALTH EXPENDITURE .....</b>	<b>197</b>
8.1 INTRODUCTION .....	197
8.2 METHODOLOGICAL APPROACH .....	197
8.3 RESULTS .....	200
8.3.1 <i>Magnitude of financial catastrophic events</i> .....	200
8.3.1.1 Objective measure of financial burden .....	200
8.3.1.2 Self-reported financial difficulties .....	202
8.3.1.3 Comparing objective and subjective measures .....	205
8.3.2 <i>Reasons explaining catastrophic expenditure</i> .....	206
8.3.2.1 High burden of expenditure caused by medical care in ambulatory care .....	206
8.3.2.2 High burden of expenditure caused by medical care in hospitalization .....	208
8.3.2.3 High burden of expenditure caused by non-medical items .....	212
8.3.3 <i>Coping strategies and implications on households</i> .....	212
8.4 DISCUSSION .....	214
8.5 CONCLUSION .....	221
<b>CHAPTER 9: DISCUSSION .....</b>	<b>223</b>
9.1 INTRODUCTION .....	223
9.2 METHODOLOGICAL AND DATA ISSUES .....	223
9.2.1 <i>Household survey</i> .....	223
9.2.2 <i>Qualitative interviews</i> .....	226
9.2.3 <i>Broader methodological issues</i> .....	228
9.3 SUMMARY OF FINDINGS .....	230
9.3.1 <i>UC scheme implementation and provider responses</i> .....	230
9.3.2 <i>Access to and use of services and UC benefits by the elderly</i> .....	232
9.3.3 <i>Financial protection for the elderly</i> .....	232
9.4 DISCUSSION ON KEY FINDINGS FROM THE STUDY .....	234
9.4.1 <i>UC policy implementation and provider responses</i> .....	234
9.4.2 <i>Use of care among the elderly</i> .....	241
9.4.3 <i>Financial protection for the elderly</i> .....	244

9.5 SUMMARY .....	248
<b>CHAPTER 10: CONCLUSIONS AND POLICY IMPLICATIONS .....</b>	<b>251</b>
10.1 CONCLUSIONS ON FINDINGS .....	251
10.2 CONCLUSIONS RELATING TO SCHEME DESIGN AND MANAGEMENT .....	253
10.3 CONTRIBUTION TO KNOWLEDGE .....	257
10.4 IMPLICATIONS OF THE STUDY FOR POLICY MAKERS .....	258
10.4.1 <i>Recommendations for Thai policy makers</i> .....	258
10.4.2 <i>General recommendations for middle-income countries</i> .....	261
10.5 AREAS FOR FURTHER RESEARCH .....	263
10.6 CONCLUSIONS .....	265
<b>REFERENCES.....</b>	<b>266</b>
<b>APPENDIX 1: DETERMINANTS OF SERVICE UTILIZATION AMONG THE ELDERLY ...</b>	<b>283</b>
A1.1 THE BEHAVIOUR MODEL .....	283
A1.2 EMPIRICAL STUDIES OF FACTORS DETERMINING HEALTH SERVICE USE AMONG THE ELDERLY .....	285
A1.3 THE NONUSERS AND UNMET NEED .....	290
A1.4 <i>Methodological issues</i> .....	292
<b>APPENDIX 2: ILLNESS AND SERVICE UTILIZATION AMONGST THAI ELDERLY PRIOR TO THE UC SCHEME .....</b>	<b>305</b>
<b>APPENDIX 3: RESEARCH TOOLS.....</b>	<b>312</b>
A3.1 QUESTIONNAIRE FORM 1: A SURVEY OF THE UNIVERSAL COVERAGE SCHEME FOR THAI ELDERLY ..	313
A3.2 QUESTIONNAIRE FORM 2: ILLNESS AND SERVICE USE IN THE PREVIOUS MONTH.....	326
A3.3 QUESTIONNAIRE FORM 3: CARE PATTERN FOR CHRONIC CONDITIONS.....	328
A3.4 QUESTIONNAIRE FORM 4: HOSPITALIZATION IN THE PREVIOUS YEAR .....	330
A3.5 OPEN ENDED QUESTIONS FOR IN-DEPTH INTERVIEW WITH HEALTH ADMINISTRATORS AND MANAGERS	332
A3.6 OPEN ENDED QUESTIONS FOR FOCUS GROUP DISCUSSION WITH PROVIDERS.....	333
A3.7 OPEN ENDED QUESTIONS FOR FOCUS GROUP DISCUSSIONS WITH ELDERLY PEOPLE.....	334
A3.8 OPEN ENDED QUESTIONS FOR IN-DEPTH INTERVIEW WITH INDIVIDUALS WITH CATASTROPHIC EXPENDITURE.....	335
<b>APPENDIX 4: INTERVIEW SCHEDULE .....</b>	<b>336</b>
A4.1 HOUSEHOLD SURVEY SCHEDULE .....	336
A4.2 IN-DEPTH INTERVIEW AND FOCUS GROUP DISCUSSIONS .....	338
<b>APPENDIX 5: HOUSEHOLD ECONOMIC STATUS.....</b>	<b>340</b>
A 5.1 MEASURING HOUSEHOLD ECONOMIC STATUS .....	340



A 5.2 QUESTIONNAIRE DESIGN AND DATA COLLECTION.....	346
A 5.3 PROBLEMS AND LIMITATIONS OF THE DATASET.....	348
A 5.4 SELECTING HOUSEHOLD ECONOMIC INDICATORS .....	349
A 5.5 DISCUSSION.....	353
A 5.6 CONCLUSION .....	355
<b>APPENDIX 6: SERVICE UTILIZATION .....</b>	<b>358</b>
<b>APPENDIX 7: EQUITY OF OUT-OF-POCKET PAYMENT.....</b>	<b>369</b>

## LIST OF TABLES

TABLE 2. 1 PAYMENT MECHANISMS AND PROVIDER BEHAVIOR .....	42
TABLE 2. 2 CHOICES OF MEDICARE PLAN IN 2003 .....	47
TABLE 3. 1 SELECTED SOCIAL, ECONOMIC AND HEALTH INDICATORS.....	66
TABLE 3. 2 LIFE EXPECTANCY AT AGE 60 IN 1974-6, 1985-6, AND 1995-6, THAILAND (IN YEARS).....	68
TABLE 3. 3 THE RATIO OF POPULATION: UNIT OF HEALTH RESOURCE IN THAILAND 1971 - 2000 .....	71
TABLE 3. 4 ILLNESS AND SERVICE UTILIZATION AMONG THE THAI 1991, 1996, AND 2001 .....	77
TABLE 3. 5 ILLNESS RATE (EPISODES/PERSON/YEAR) BY SOCIO-DEMOGRAPHIC CHARACTERISTICS AMONG THE ELDERLY AGED 60 AND ABOVE IN 1991, 1996, AND 2001.....	78
TABLE 3. 6 USE OF HEALTH SERVICES AMONG THE ELDERLY AGED 60 AND ABOVE, 2001 .....	80
TABLE 3. 7 MAIN DIFFERENCES BETWEEN THE UC SCHEME AND THE MWS .....	84
TABLE 4. 1 INFORMATION NEEDED AND METHODS EMPLOYED TO ANSWER THE OBJECTIVES.....	93
TABLE 4. 2 SELECTED SOCIAL, ECONOMIC, AND HEALTH INDICATORS IN 2000, YASOTHON AND NORTHEAST REGION.....	96
TABLE 4. 3 RATIOS OF POPULATION PER UNIT OF HEALTH RESOURCE IN 2000 .....	97
TABLE 4. 4 RESEARCH METHODS EMPLOYED IN THE STUDY .....	98
TABLE 4. 5 NUMBER OF CLUSTERS AND SAMPLE SELECTED FROM EACH AREA AND DISTRICT .....	101
TABLE 4. 6 DEGREE OF AGREEMENT OF SELECTED VARIABLES BETWEEN THE SURVEY AND THE RE-INTERVIEW .....	105
TABLE 4. 7 PAIRED T-TEST FOR HOUSEHOLD INCOME AND EXPENDITURE.....	107
TABLE 4. 8 PARTICIPANTS IN-DEPTH INTERVIEWS AND FOCUS GROUP DISCUSSIONS .....	109
TABLE 4. 9 CHARACTERISTICS OF CASES IN CASE STUDY.....	111
TABLE 5. 1 A FRAMEWORK FOR DATA ANALYSIS OF THE UC SCHEME.....	114
TABLE 5. 2 ELDERLY BENEFICIARY REGISTRATION, YASOTHON PROVINCE 2002 .....	117
TABLE 5. 3 SUMMARY OF FINDINGS .....	140
TABLE 6. 1 PRESENCE OF CHRONIC CONDITIONS BY SOCIO-DEMOGRAPHIC STATUS.....	160
TABLE 6. 2 RESPONDENTS WITH ILLNESS AND ILLNESS RATES BY VARIOUS FACTORS.....	161
TABLE 6. 3 SERVICE UTILIZATION AND TAKE-UP OF UC BENEFIT IN THE PREVIOUS MONTH AND UTILIZATION RATE BY VARIOUS FACTORS .....	166
TABLE 6. 4 HOSPITALIZATION IN THE PREVIOUS YEAR.....	168
TABLE 6. 5 FACTORS EXPLAINING THE PROBABILITY OF USE OF HEALTH FACILITY AND THE UC CARD FOR AMBULATORY CARE AND THE NUMBER OF VISITS AND VISITS COVERED BY THE UC SCHEME IN THE PREVIOUS MONTH.....	170
TABLE 6. 6 FACTORS EXPLAINING HOSPITALIZATION IN THE PREVIOUS YEAR.....	172

TABLE 7. 1 MEAN EXPENDITURE ON AMBULATORY CARE IN THE PREVIOUS MONTH AMONG THOSE SPENDING OUT-OF-POCKET BY INCOME QUINTILE (BAHT IN 2002 PRICE).....	183
TABLE 7. 2 MEAN EXPENDITURE AMONG RESPONDENTS WITH EXPENSE ON HOSPITALIZATION IN THE PREVIOUS YEAR BY INCOME QUINTILE (BAHT IN 2002 PRICE).....	184
TABLE 7. 3 EXPENDITURE ON AMBULATORY CARE IN PREVIOUS MONTH AS PERCENTAGE OF MONTHLY PER CAPITA CASH INCOME AMONG RESPONDENTS SEEKING CARE .....	187
TABLE 7. 4 EXPENDITURE ON HOSPITALIZATION IN PREVIOUS YEAR AS PERCENTAGE OF ANNUAL PER CAPITA CASH INCOME AMONG RESPONDENTS WITH ADMISSION .....	187
TABLE 7. 5 PERCENTAGE OF PER CAPITA ANNUAL CASH INCOME SPENDING ON AMBULATORY CARE AND HOSPITALIZATION IN THE PREVIOUS YEAR BY INCOME QUINTILE.....	188
TABLE 8. 1 CHARACTERISTICS OF THE PROBLEM (%) BY AREA OF RESIDENCE.....	203
TABLE A1. 1 DETERMINANTS OF PHYSICIAN UTILIZATION.....	295
TABLE A1. 2 DETERMINANTS OF HOSPITALIZATION AND HOSPITAL DAYS .....	298
TABLE A1. 3 DETERMINANTS OF USE OF DENTAL SERVICE, HOME HELP CARE, AND PREVENTIVE SERVICES ....	300
TABLE A2. 1 PERCENTAGE OF ELDERLY AGED 70 AND ABOVE BY DEMOGRAPHIC AND SOCIOECONOMIC CONDITIONS IN 1991, 1996, AND 2001 .....	305
TABLE A2. 2 DISTRIBUTION OF SOCIOECONOMIC STATUS AND INSURANCE COVERAGE AMONG THE ELDERLY AGED 60 AND ABOVE BY AREA OF RESIDENCE, 2001 .....	309
TABLE A5. 1 MEAN PER CAPITA INCOME AND EXPENDITURE BY INCOME QUINTILE (BAHT IN 2002 CURRENT PRICE) .....	350
TABLE A5. 2 MEAN PER CAPITA INCOME AND EXPENDITURE BY EXPENDITURE QUINTILE (BAHT IN 2002 CURRENT PRICE).....	350
TABLE A5. 3 PER CAPITA INCOME QUINTILE BY PER CAPITA EXPENDITURE QUINTILE.....	351
TABLE A5. 4 MULTIPLE LINEAR REGRESSION MODELS PREDICTING PER CAPITA HOUSEHOLD CASH INCOME AND EXPENDITURE.....	353
TABLE A6. 1 INDIVIDUAL CHARACTERISTICS BY AREA OF RESIDENCE.....	358
TABLE A6. 2 INDIVIDUAL CHARACTERISTICS ACCORDING TO AGE GROUPS.....	359
TABLE A6. 3 LIVING ARRANGEMENTS BY AREA OF RESIDENCE .....	360
TABLE A6. 4 LIVING ARRANGEMENTS BY AGE GROUP .....	360
TABLE A6. 5 ECONOMIC CONDITIONS BY AREA OF RESIDENCE .....	361
TABLE A6. 6 PERCENTAGE OF RESPONDENTS RECEIVING INCOME FROM DIFFERENT SOURCES .....	361
TABLE A6. 7 PERCENTAGE OF DISEASE CATEGORIES IN PREVIOUS MONTH .....	362
TABLE A6. 8 AVERAGE LENGTH OF STAY PER ADMISSION BY AREA OF RESIDENCE AND REPORTING CONVENIENT ACCESS.....	363
TABLE A6. 9 DEPENDENT AND INDEPENDENT VARIABLES FOR THE PROBABILITY OF AN INDIVIDUAL HAVING AT LEAST ONE AMBULATORY VISIT (MODEL 1) OR USING THE UC CARD AT LEAST ONCE FOR AMBULATORY CARE IN THE PREVIOUS MONTH .....	365

TABLE A6. 10 DEPENDENT AND INDEPENDENT VARIABLES FOR THE NUMBER OF AMBULATORY VISITS IN THE PREVIOUS MONTH AMONG THOSE ACCESSING HEALTH FACILITIES (MODEL 3) .....	366
TABLE A6. 11 DEPENDENT AND INDEPENDENT VARIABLES FOR THE NUMBER OF AMBULATORY VISITS COVERED BY THE UC SCHEME IN THE PREVIOUS MONTH AMONG THOSE USING THE UC CARD (MODEL 4) .....	366
TABLE A6. 12 DEPENDENT AND INDEPENDENT VARIABLES FOR THE PROBABILITY OF HOSPITALIZATION (MODEL 5) OR HOSPITALIZATION UNDER THE UC SCHEME (MODEL 6) IN THE PREVIOUS YEAR .....	367
TABLE A6. 13 DEPENDENT AND INDEPENDENT VARIABLES FOR THE NUMBER OF ADMISSIONS IN THE PREVIOUS YEAR AMONG THOSE BEING HOSPITALIZED (MODEL 7) .....	367
TABLE A6. 14 DEPENDENT AND INDEPENDENT VARIABLES FOR THE NUMBER OF ADMISSIONS COVERED BY THE UC SCHEME IN THE PREVIOUS YEAR AMONG THOSE USING THE UC CARD AT LEAST ONCE FOR HOSPITALIZATION (MODEL 8) .....	368
TABLE A7. 1 INDIVIDUAL AND HOUSEHOLD CHARACTERISTICS BY INCOME QUINTILE .....	369
TABLE A7. 2 MEAN MEDICAL EXPENDITURE ON AMBULATORY CARE VISITS BY TYPE OF CARE AND PAYMENT METHOD (BAHT IN 2002 PRICE) .....	370
TABLE A7. 3 MEAN NON-MEDICAL EXPENDITURE ON AMBULATORY CARE VISITS BY TYPE OF CARE AND AREA OF RESIDENCE (BAHT IN 2002 PRICE) .....	370
TABLE A7. 4 MEAN MEDICAL EXPENDITURE ON HOSPITALIZED EPISODES BY TYPE OF HOSPITAL AND PAYMENT METHOD (BAHT IN 2002 PRICE) .....	371
TABLE A7. 5 REASONS AND MEAN MEDICAL EXPENDITURE ON AMBULATORY VISITS AND ADMISSIONS AMONG THOSE COMPLYING WITH THE UC SCHEME (BAHT IN 2002 PRICE) .....	371
TABLE A7. 6 MEAN NON-MEDICAL EXPENDITURE ON HOSPITALIZED EPISODE BY TYPE OF HOSPITAL AND ARE OF RESIDENCE (BAHT IN 2002 PRICE) .....	371

# LIST OF FIGURES

FIGURE 2. 1 FRAMEWORK FOR POLICY ANALYSIS OF INSURANCE FUNCTIONS.....	40
FIGURE 2. 2 KAKWANI INDEX OF PROGRESSIVITY .....	59
FIGURE 3. 1 INSURANCE COVERAGE (%) AMONG THAIS IN 1991, 1996, AND 2001 .....	76
FIGURE 4. 1 CONCEPTUAL FRAMEWORK .....	91
FIGURE 4. 2 MAP OF YASOTHON PROVINCE .....	95
FIGURE 4. 3 STEPS OF SAMPLING PROCESS .....	101
FIGURE 4. 4 LOCATION OF URBAN AND RURAL CLUSTERS.....	102
FIGURE 5. 1 NUMBER OF OUTPATIENT VISITS, YASOTHON PROVINCE 1998 – 2002 .....	119
FIGURE 5. 2 REASONS OF INCONVENIENCE IN ACCESS REGISTERED HOSPITAL .....	120
FIGURE 5. 3 NUMBER OF ADMISSIONS BY TYPES OF HOSPITAL 1998-2002, YASOTHON .....	129
FIGURE 5. 4 SERVICE UTILIZATION IN HEALTH CENTRES, YASOTHON PROVINCE 1998-2002 .....	138
FIGURE 6. 1 PROBABILITY PATHWAYS OF FIRST ACTION TAKEN BY URBAN RESPONDENTS IN THE PREVIOUS MONTH .....	163
FIGURE 6. 2 PROBABILITY PATHWAYS OF FIRST ACTION TAKEN BY RURAL RESPONDENTS IN THE PREVIOUS MONTH .....	163
FIGURE 6. 3 AMBULATORY CARE SOUGHT IN THE PREVIOUS MONTH BY INCOME QUINTILE .....	164
FIGURE 8. 1 PERCENTAGE OF RESPONDENTS WITH EXPENDITURES GREATER THAN OR EQUAL TO 40% OF PER CAPITA CASH INCOME BY INCOME GROUP AND AREA OF RESIDENCE .....	201
FIGURE 8. 2 MEAN EXPENDITURE OF RESPONDENTS WITH HIGH BURDEN OF OUT-OF-POCKET PAYMENTS BY INCOME GROUP AND AREA OF RESIDENCE .....	201
FIGURE 8. 3 PERCENTAGE OF EXPENDITURES OF THOSE WITH HIGH BURDEN BY TYPE OF PAYMENT AND AREA OF RESIDENCE .....	202
FIGURE 8. 4 PERCENTAGE OF RESPONDENTS REPORTING FINANCIAL DIFFICULTIES BY INCOME GROUP AND AREA OF RESIDENCE .....	203
FIGURE 8. 5 MEAN EXPENDITURE OF THOSE REPORTING FINANCIAL DIFFICULTY BY INCOME GROUP AND AREA OF RESIDENCE .....	204
FIGURE 8. 6 PERCENTAGE OF EXPENDITURES OF THOSE REPORTING FINANCIAL DIFFICULTIES BY TYPE OF PAYMENT AND AREA OF RESIDENCE .....	204
FIGURE 8. 7 MEAN AND MEDIAN EXPENDITURES OF RESPONDENTS WITH FINANCIAL DIFFICULTIES AND HIGH BURDEN OF HEALTH EXPENDITURE (40 % OR MORE) .....	205
FIGURE A1. 1 THE BEHAVIOUR MODEL PHASE 4. ....	284
FIGURE A2. 1 PERCENTAGE OF ELDERLY AGED 60 AND ABOVE REPORTED ILLNESS DURING THE 2-WEEK RECALL PERIOD BY AREA OF RESIDENCE AND AGE GROUP, 2001 .....	306
FIGURE A2. 2 PERCENTAGE OF ELDERLY AGED 60 AND ABOVE REPORTED ILLNESS DURING THE 2-WEEK RECALL PERIOD BY SEX AND AGE GROUP, 2001 .....	306

FIGURE A2. 3 PERCENTAGE OF ELDERLY AGED 60 AND ABOVE REPORTED ILLNESS DURING THE 2-WEEK RECALL PERIOD BY MARITAL STATUS AND AGE GROUP, 2001 .....	307
FIGURE A2. 4 PERCENTAGE OF ELDERLY AGED 60 AND ABOVE REPORTED ILLNESS DURING THE 2-WEEK RECALL PERIOD BY EDUCATIONAL LEVEL AND AGE GROUP, 2001 .....	307
FIGURE A2. 5 PERCENTAGE OF ELDERLY AGED 60 AND ABOVE REPORTED ILLNESS DURING THE 2-WEEK RECALL PERIOD BY INSURANCE COVERAGE AND AGE GROUP, 2001 .....	308
FIGURE A2. 6 PERCENTAGE OF ELDERLY AGED 60 AND ABOVE REPORTED ILLNESS DURING THE 2-WEEK RECALL PERIOD BY PER CAPITA MONTHLY HOUSEHOLD INCOME AND AGE GROUPS, 2001 .....	308
FIGURE A2. 7 PERCENTAGE OF INSURANCE COVERAGE AMONG THE ELDERLY AGED 60 AND ABOVE BY PER CAPITA MONTHLY HOUSEHOLD INCOME IN 2001 .....	309
FIGURE A2. 8 INSURANCE COVERAGE AMONG THE ELDERLY AGED 60 AND ABOVE BY EDUCATIONAL LEVEL, 2001 .....	310
FIGURE A2. 9 PROBABILITIES OF USE HEALTH FACILITIES (%) AMONG THE ELDERLY AGED 60 AND ABOVE BY INSURANCE COVERAGE AND RESIDENTIAL AREA, 2001 .....	310
FIGURE A2. 10 PROBABILITIES OF USE HEALTH FACILITIES (%) AMONG THE ELDERLY AGED 60 AND ABOVE BY PER CAPITA HOUSEHOLD MONTHLY INCOME AND RESIDENTIAL AREA, 2001 .....	311
FIGURE A2. 11 PROBABILITIES OF USE HEALTH FACILITIES (%) AMONG THE ELDERLY AGED 60 AND ABOVE BY INSURANCE COVERAGE AND PER CAPITA HOUSEHOLD INCOME. 2001 .....	311
FIGURE A5. 1 DISTRIBUTION OF HOUSEHOLD INCOME AND EXPENDITURE BY HOUSEHOLD INCOME AND EXPENDITURE DECILES RESPECTIVELY .....	349
FIGURE A5. 2 HOUSEHOLD ASSETS BY PER CAPITA INCOME QUINTILE .....	352
FIGURE A5. 3 HOUSEHOLD ASSETS BY PER CAPITA HOUSEHOLD EXPENDITURE .....	352
FIGURE A6. 1 OWNING OF ASSETS AND DURABLE GOODS BY AREA OF RESIDENCE .....	362
FIGURE A6. 2 TYPE OF ADMISSION HOSPITAL BY AREA OF RESIDENCE .....	363
FIGURE A6. 3 TYPE OF ADMISSION HOSPITAL BY INCOME QUINTILE .....	364
FIGURE A6. 4 TYPE OF ADMISSION HOSPITAL BY REPORTING CONVENIENT ACCESS TO CONTRACTED HOSPITAL .....	364
FIGURE A7. 1 EXPENDITURE ON NON-MEDICAL ITEMS BY LENGTH OF STAY .....	372
FIGURE A7. 2 AVERAGE HOSPITAL DAYS AMONG HOSPITALIZED INDIVIDUALS BY INCOME QUINTILE .....	372

## ACKNOWLEDGEMENTS

Doing a PhD has been in my mind since 1995 when I was doing my MSc. in this school. The window of opportunities just opened to me in 2001 when the capacity strengthening programme in health system research was established under the International Health Policy Programme, and funded by WHO Thailand country budget. So I am grateful to WHO Thailand who provided full financial support for the study and field work; without the funding, it is not feasible for me to do a PhD here. My gratitude also goes to the Health System Research Institute, the International Health Policy Programme, and the Ministry of Public Health that supported and provided opportunities for me to do PhD. I am also grateful to Dr. Viroj Tangcharoensathien and Dr. Supasit Pannarunothai who encouraged and supported me to do a PhD.

My deep gratitude goes to my supervisor, Professor Anne Mills, under whose encouraging and inexhaustible supervision, my scattered idea and drafts became more solid and applicable. Special gratitude goes to Liam Smeeth and Kara Hanson for their professional advice in statistical analysis and comments on drafts of my chapters. I am also grateful to Tamsin Kelk for her effective work in English editing.

Many people in Thailand played impressive roles during my study and fieldwork. My deep gratitude goes to my boss, Dr. Pipat Yingsaree, who provided all necessary logistic support to facilitate my study and fieldwork. Special thanks go to my colleagues in the Health Insurance Office, particularly Ms. Jarinya Sooksanit who helped to manage and support various things for me when I was in London or in Thailand. More thanks go to people in the Yasothon Provincial Health Office, particularly the Provincial Chief Medical Officer-Dr. Ittipon Soungkaeng, my research assistant Somchat Thonghin, and all colleagues in the health insurance section. I am grateful to Dr. Virasakdi Chongsuvivatwong for professional advice in statistical analysis when I was in Thailand. Last but not least, my gratitude goes to all respondents who provide valuable information, without their coordination, this thesis might not appear as it does.

**DEDICATION**

To my parents



## **ABBREVIATIONS**

CSMBS	Civil Servant Medical Benefit Scheme
CUP	Contracting unit for primary care
DRG	Diagnosis Related Group
H&W	Health and Welfare survey
HC	Health Card Scheme
HCR	Health Care Reform Project
HIO	Health Insurance Office, Ministry of Public Health
HSRI	Health System Research Institute
IOL	Intra-ocular lens implantation
IP	Inpatient care
LIC	Low Income Card Scheme
MOPH	Ministry of Public Health
MWS	Medical Welfare Scheme
NCD	Non-communicable Disease
NESDB	National Economic and Social Development Board
NESDP	National Economic and Social Development Plan
NHSO	National Health Security Office
NSO	National Statistics Office
OP	Outpatient care
PCMO	Provincial Chief Medical Officer
PCU	Primary care unit
PHO	Provincial Health Office

P&P	Prevention and promotion activities
RCOT	The Royal College of Ophthalmologist of Thailand
SES	Socio-economic survey
SIP	Social Investment Project, World Bank
SSS	Social Security Scheme
TAI	Traffic Accident Insurance
UC	Universal Coverage
WHO	World Health Organization

## CHAPTER 1: INTRODUCTION

### 1.1 Background

Recently, the world population has been getting older. Most middle-aged citizens in some developed countries such as Japan, Germany, Italy, etc. have more grandparents than children (Walker and Maltby, 1997) as their population aged 60 or over is greater than the number of children below 15 years (United Nations, 2002). Rapid declines of fertility and mortality rates in developing countries are resulting in increases in longevity and the number of older people (Kinsella, 1997). Most of the world has, or soon will have, experienced a population aging, a shift towards an older population, where the older age group increases in number faster than younger groups.

Population aging has numerous implications for the health care system, both service provision and financing. Older people have a relatively higher cost of care, 2-5 times more compared with the non-elderly (Van der Gaag and Prescott, 1998). The relatively high cost of care among the elderly is the result of relatively high health needs due to the aging process, a progressive, generalized impairment of function resulting in a loss of adaptive response to stress and in a growing risk of age associated disease (Kirkwood, 1997). Various studies also show a disproportionate per capita growth of health expenditure among the elderly that increases with age (Barer et al., 1987; Haan et al., 1997). However, this is not due to the age *per se*, and the disproportionate growth can be explained by various factors, such as a high proportion of people near death (Fuchs, 1984), age proximity to death (O'Neill. C et al., 2000), high costs of care in the years prior to death (Scitovsky, 1984; Scitovsky, 1988; Lubitz and Riley, 1993; Scitovsky, 1994), advances in medical technology, and in appropriate response of the health care system (Lubitz and Riley, 1993).

In contrast to the high costs of care, the elderly usually have low disposable income (but may be better off in terms of fixed assets) and need cross-subsidization from the working population if they are not required to save over their life-time for health costs (e.g. Medical Saving Account).

## **1.2 Universal health coverage for older people: the role of insurance**

Considering the relatively high health needs and high cost of care of older people in contrast to their low ability to pay, all developed countries provide universal health coverage for their older citizens, including in the U.S. A few developing countries also provide universal health care coverage for this group e.g. Argentina and Thailand. An equity consideration is the primary objective of providing universal coverage; all individuals should access needed health care and there should not be anyone bankrupt because of payments for getting care.

Evidence from the literature reveals that in most developed countries where universal coverage is achieved, access to services fully covered by the insurance among older people is equitable, such as primary care (Victor and Vetter, 1986; Fernandex-Mayoralas et al., 2000; Schellhorn et al., 2000; Walter-Ginzburg et al., 2001) and hospitalization (Blazer et al., 1995; Walter-Ginzburg et al., 2001). However, differences in access still exist for specialist care and clinical preventive care (Schellhorn et al., 2000; Bowling et al., 2001), and partially covered or uncovered services (Donelan et al., 2000; Fernandex-Mayoralas et al., 2000; Federman et al., 2001; Dunlop et al., 2002). Regarding financial protection, evidence from the literature reveals that universal coverage systems provide financial protection to the older, sicker populations and reasonable access to care (Donelan et al., 2000). However, in the U.S., the non-comprehensive benefit package of Medicare (lack of depth of coverage), in addition to under-coverage of Medicaid (lack of breadth of coverage), results in inequity in the finance of health care and a greater proportion of catastrophic health care expenditure among the poor elderly than the non-poor elderly. In general, how well universal health coverage for the elderly performs its two basic functions, enabling access to care and protecting the elderly from catastrophic payments, depends on the comprehensiveness and appropriateness of the system design.

## **1.3 Universal health coverage for Thai elderly: the role of insurance**

The health care system in Thailand is a private-public mix of both financing and service provision. A policy of charging for drugs and medical services in public facilities was in

place between 1945 and 2001, together with an informal exemption mechanism at the discretion of the health worker for people who could not afford fees. Informal exemptions gradually evolved into a systematic means-testing scheme known as the Low Income Scheme (LIC) in 1975. A specific free care program for older people was announced in 1992 by the government; nonetheless, no explicit operational definition of eligible elderly was provided by the Ministry of Public Health (MOPH), resulting in differences in practice across provinces and hospitals (Kumnuansilpa et al., 2000).

Evidence from the national surveys of 1996 and 2001 reveals that there have been improvements in overall health and access to formal care among Thai elderly; however, differences in health and access to formal care across areas of residence and socioeconomic status persisted (NSO, 1996; NSO, 2001). Improvement of health status of the elderly during the previous decades could be explained by improvement of socioeconomic conditions, availability of health services, and public health interventions. The substantial increase of insurance coverage among the elderly may explain the majority of improvements in access to care, as well as improvement of physical access, socioeconomic conditions, modernization, and attitude toward health care. Even though elderly persons who were poor and living in rural areas had the highest insurance coverage, the probability of getting formal care once ill amongst them was lower than those who were rich and living in Bangkok, but it was comparable to those residing in urban areas (municipalities).

In April 2001, according to the commitment during the election, the new government launched a universal coverage scheme known as the 30 Baht scheme or UC scheme. It aims to cover all Thais who were not covered by public health insurance schemes and charges only 30 Baht as a co-payment for an ambulatory visit. The 30 Baht co-payment is waived for many groups, including the elderly<sup>1</sup>.

---

<sup>1</sup> The 30 Baht co-payment is waived for those eligible to free care provided by the Medical Welfare Scheme (MWS): the poor, children under 12, secondary school students, the elderly, disabled persons, veterans, monks, community leaders and health volunteers' families.

The UC scheme incorporates two main reform initiatives: reforming of budget allocation and payment method, and strengthening primary care. The budget allocation was changed from historical supply-based to a need-based system by employing a per capita operating budget allocation. Two performance-based payment methods were provided as options for provinces: inclusive capitation (a capitation for all personal care) and exclusive capitation (a capitation for ambulatory care and DRG weighted global budget for inpatient care). Establishment of a primary care unit (PCU) for every 10,000 registered beneficiaries by all contracted hospitals is required in order to improve quality of services at primary level and physical access. The new budget allocation and payment methods had enormous effects on health facilities in terms of financial status; some were gainers and some were losers. How providers responded to the policy and what the implications were for access to care and financial protection for the elderly are crucial policy questions.

### **1.4 Knowledge gaps**

Little is known about the role of universal health coverage and access to care and financial protection for the elderly in developing countries. All studies reviewed relating to universal health coverage for the elderly were conducted in developed countries, where the system is quite well developed and resources are available in addition to the existence of better socioeconomic conditions among the older population. Differences in benefit packages, system design, and institutional arrangements will inevitably affect the success of universal coverage: whether UC provides equitable access and financial protection for the elderly across areas of residence and socioeconomic groups. Differences between developed and developing countries in level of socioeconomic development, culture, attitudes, family structure and support, and social networks are prevalent among the elderly population; therefore, a different response of the elderly to the insurance might be expected in different settings. Strong family and social support, together with a good attitude of people toward the elderly in East Asian developing countries, might lessen the severity of a lack of breadth or depth of insurance coverage in terms of access and catastrophic expenditure for the elderly.

In Thailand, the limited differences in overall utilization of formal care amongst the elderly by area of residence (urban-rural) might be the result of a counterbalance between the higher coverage of health insurance among rural elderly and the poor, and the greater physical access and ability to pay among urban elderly. One question raised by the provision of universal coverage is whether the scheme will widen urban-rural and socioeconomic differences in service use among the elderly due to higher opportunity cost of seeking care and lower availability of services in rural areas. Evidence on neither equity of out-of-pocket payment nor catastrophic health expenditure among the elderly exists in Thailand. So, how effectively the UC scheme was implemented and whether it provided equitable access and financial protection for the elderly form the main focus of this study.

## **1.5 Purpose and contents of thesis**

### **1.5.1 Purpose**

The study aims to understand how well the Universal Coverage scheme has been implemented in Thailand and performed its two basic functions (enabling access to care and protecting the elderly from catastrophic payment), in order to inform policy-makers and health administrators on how to improve the policy, its implementation, and the service delivery system for the elderly.

*Specific objectives include:*

- 1). To assess how effectively the UC scheme has been implemented for the elderly in a selected province, problems and constraints, and providers' responses to the policy, and its implications in term of service provision for the elderly.
- 2). To assess service utilization and take-up of UC benefit among elderly persons residing in urban and rural areas, and factors explaining the use of services and take-up of benefit including whether the UC scheme provided equitable use of services for the elderly.
- 3). To measure equity of out-of-pocket payment among elderly beneficiaries of the UC scheme.

- 4). To assess how well the UC scheme protects the elderly from catastrophic payments, and their implications for households and the elderly in terms of burden of costs and coping mechanisms.

### **1.5.2 Contents of thesis**

The thesis is divided into three major parts. Part 1 provides background information, literature review, and outlines the purpose, scope and methodology of the research. Chapter 2 describes characteristics of health, well-being, and health care in old age, and the role of universal health coverage in enabling access to care and protecting the elderly from catastrophic payment. Chapter 3 provides background information about Thailand in relation to trends and status of older people, development of service delivery system and health insurance for older people. Chapter 4 presents the aim and objectives of the study, and methodologies employed.

Part 2 presents results of the study which includes 4 chapters relating to the objectives. Chapter 5 explores UC policy implementation in Yasothon, providers' responses, and their implications for access to care of older people based on focus group discussion and in-depth interviews conducted with health administrators, managers, providers, and older people. Chapter 6 assesses service utilization and take-up of UC benefit, whether the scheme provided equitable use of services for the elderly by area of residence and socioeconomic status, based on data collected from households in Yasothon using interview administered questionnaire. Chapter 7, using the same database as chapter 6, assesses the equity of out-of-pocket payment by economic group. Chapter 8 assesses catastrophic expenditures and implications for households based on data collected from three sources: household survey, focus group discussions, and in-depth interview with case studies. All results chapters include introduction, a brief methodology, results, discussion and conclusion.

Part 3 consists of two chapters. Chapter 9 discusses the strengths and weaknesses of the study's methodology and findings. Chapter 10 presents substantive conclusions about the UC implementation and its performance in the study province, as well as theoretical



conclusions that are of relevance elsewhere. Policy implications for local, national, and international levels and areas for further research are then suggested.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

The aim of this chapter is to review issues in relation to *an aging population*, health, health care utilization, and the role of health insurance among older people. Two main areas will be reviewed. In the first section, the aging population, health, well-being and health care for older people will be reviewed in order to understand the distinctive features of older people and the implications of an aging population. Then, as all developed countries already provide universal access to medical care for the elderly, the role of insurance and its effects on access to and use of services and financial protection will be reviewed in the subsequent section. Greater emphasis will be put on the latter issue since it is the main focus of this study.

### **2.2 Aging population, health, well-being, and health care in old age**

#### **2.2.1 Aging population**

Aging is a progressive, generalized impairment of function resulting in a loss of adaptive response to stress and in a growing risk of age-associated disease (Kirkwood, 1997). The overall effects of these changes are seen in the increase in the probability of morbidity, disability, and mortality that occur among the older age groups in the population. Although old age is defined chronologically and varies across countries, culture, and time, for practical purposes, the ages of 60 and 65 are commonly adopted as the beginning of old age for developing and developed countries respectively, according to the UN definition (Kasturi, 1994). A lower proportion of older people and shorter life expectancy may explain why the lower level is used in developing countries. Population aging refers to the increasing proportion of old people within a population which is the result of the demographic transition from high to low levels of fertility and mortality. The current increases in the absolute numbers of elderly people are a consequence of high birth rates in the previous decades; as death rates continue to decline, more and more survivors will reach old age. Increases in the proportion of older persons (60 years or older) are being

accompanied by declines in the proportion of the young (under age 15) as a result of the decline in the fertility rate.

Population ageing is a global phenomenon affecting both developed countries and developing countries. Currently, the older population (of persons 60 years or over) is growing faster than the total population in practically all regions of the world, and the difference in growth rates is increasing (United Nations, 2002). In 1950, there were 205 million people aged 60 or over throughout the world: fifty years later, the number of older people increased about three times to 606 million. The current annual growth rate of the older population is 1.9% compared to 1.2% of the total population. Moreover, the older population is itself ageing; the annual growth rate of persons aged 80 years or over is, globally, twice as high as that of the population aged 60-70 years (United Nations, 2002).

Disparities in the stage and growth rates of aging populations are apparent between developed and developing countries, regions, and countries. In general, developed countries are in a more advanced stage of the demographic transition; the percentage of people aged 60 or over in developed countries was approximately 20% in 2000 compared with only 8 % in the less developed countries. In 2000, the number of people aged 60 or over in 26 European countries and Japan was already greater than the number of children below 15 years (ageing index > 100). In contrast, the ageing index in 18 developing countries, mostly in Africa and Cambodia, was below 10 in the same year. However, the current ageing process in most developing countries is happening much faster than that in developed countries: a 2.5% annual increase compared with only 0.9%, and it is occurring on a relatively larger population basis (United Nations, 2002). Over the last half century, 66% of the annual increase in the number of older people has occurred in developing countries. The proportion of the older population living in developing countries rose from 54% to 62% during the same period, and by the year 2020, this will rise to more than three-quarters. Benefits from availability of medical technology and interventions, such as immunization, antibiotics, modern methods of birth control, etc. help explain the current rapid ageing process in developing countries. However, the pace of the demographic transition varies from country to country and within the same country, and overlapping of its stages can be detected when regions or population groups are compared.

Population aging will have more implications for women than men since women tend to live longer, on average by 4.2 years for all nations between 2000-2005 (United Nations, 2002) (7.2 years in Japan, 5 years in UK, 5.8 years in US, and 5.9 years in Thailand). There are only a few developing countries in the same report where life expectancy at birth of females was slightly less than males i.e. Zimbabwe, Namibia, Maldives, and Botswana. Because of their greater life expectancy, women make up a significant majority of the older population, and their share increases with age. As women tend to live longer and to marry older men, they are more likely to be widowed and living alone in old age, particularly in developed countries, that results in vulnerability. In developing countries, even though the proportion of older people living alone is not as substantial as that in developed countries, women and those aged 70 or over most often experience disadvantages, especially in the realm of health (Hermalin et al., 2002).

One major issue of concern relating to population ageing is the increasing dependency burden on the working population to support the old. The potential support ratio, the number of persons aged 15-64 years per one older person aged 65 or older, decreased globally by 20%, from 11.6 in 1950 to 9.1 in 2000 (United Nations, 2002). The decrease was larger in developed countries, nearly half (from 8.2 to 4.7 during the same period), while it decreased by less than 20% in the less developed regions (from 14.9 to 12.2 in the same period). Even though the ratio had increased slightly in the least developed countries during the previous half century, large decreases are expected to take place in all regions over the next half century. Potential support ratios have important implications for social security schemes, particularly the traditional system in which current workers pay for the benefits of current retirees.

Population ageing has various major consequences and implications for all sectors in society, both for individual countries and at the global level. It will have an impact on economic growth, savings, labour markets, investment and consumption, pensions, taxation, and intergenerational transfers. Population ageing also affects health and health care, living arrangements, and the well being of older people. The latter issue is explored in the next section. The rapid increase of the older population in developing countries means they will have less time to adjust to the consequences of population ageing. Therefore, close attention should be paid to this issue in all countries in order to handle the

consequences and implications of population ageing and to maintain or improve health and well being of older people.

### **2.2.2 Health in old age**

The demographic transition is accompanied by changes in the pattern of disease known as the epidemiological transition, a shift from high mortality/high fertility to low mortality/low fertility with a shift in death distribution from the young to the old. Currently, most deaths due to infectious diseases in young people have declined dramatically in nearly all countries due to improvement of socioeconomic conditions and availability of medical and public health interventions. Nevertheless, given the biological constraints of a finite human life span, all survivors will end their life in later life, as reflected in an increase in the mortality rate and proportion of deaths among the elderly (Grundy, 1992; Scitovsky, 1994).

As more people live longer, chronic disabling conditions in relation to degenerative changes in older people and long-term exposure to risks tend to increase. Recently, a number of chronic disabling conditions have become more common with increasing age such as cardiovascular disease and stroke, cancers, musculoskeletal conditions, neurological or mental disorders, degenerative disorders, and chronic obstructive pulmonary disease (WHO, 1998a). However, given the less advanced stage of socioeconomic development and an aging population, a mixture of epidemiological transition patterns are seen in developing countries. Even though there has been a rapid decline of deaths from infectious and parasitic diseases in many parts of the developing world, these diseases continue to be a burden in terms of morbidity (Sen, 1994). Furthermore, socioeconomic development brings risks of disability and death from unintended factors such as environmental hazards and accidents, social pathologies such as homicide, as well as emerging infectious diseases such as AIDS, SARS, bird flu etc. Within the same country, differences in the pattern of demographic transition can be observed between different areas or groups with different socioeconomic status.

Holding other things constant, an increase in the proportion of older people and in longevity will increase morbidity, disability and number of years suffering from chronic conditions. However, even though aging is inevitable and irreversible, those chronic disabling conditions that often accompany it can be prevented or delayed, not only by

medical interventions but often more effectively by social, economic, and environmental interventions. Three theories have been proposed for the effect that continued decreases in death rates might have on the morbidity and disability of older people in the future: the expansion of morbidity (Gruenberg, 1977), the compression of morbidity (Fries, 1980; Fries, 1989), and the dynamic equilibrium (Manton, 1982). Various studies provide different directions; deteriorating, improving, and remaining stable overtime. Trends in life expectancy and disability-free life expectancy between 1960 and 1990 give support to the expansion of morbidity theory, with all countries (apart from France) showing some evidence that the years of life gained were years with disability (Bone et al., 1995). Some studies provide support to the compression of morbidity theory. The National Long Term Care Surveys in the U.S. show significant declines in disability prevalence and institutionalization among older people between 1982 and 1994 (WHO, 1998). Declining mean diastolic blood pressure in three successive cohorts of 70 years old included in the Gothenburg longitudinal studies, and a 17% reduction of hospitalization for ischemic heart disease in a large HMO between 1971-1991, do provide support to this optimistic view (Haan et al., 1997). For the UK, the 'dynamic equilibrium' theory appears to take precedence: trends in old age morbidity and disability show no evidence of a deterioration of health status since the mid-1980s; indeed, perceived health, particularly of women, is improving (Jarvis and Tinker, 1999). However, precaution should be taken in interpreting these data as different methodologies and measurements were employed.

The compression of morbidity model requires that the effect of preventive interventions must be greater on morbid events than on mortality, and most chronic disabling conditions are associated with a long-term accumulation of unhealthy behaviors and a hazardous environment which are preventable or avoidable. Trends in improvement in life styles and the environment may support the compression theory. However, depending on differences in the level of development, the effect of population aging on morbidity in developing countries may be different.

As health problems in old age prominently consist of chronic disabling conditions that are not cured and require comprehensive and continuous care beyond the scope of medicine, especially amongst the oldest old, the biomedicine model that defines health as the absence of disease fails to explain the health of older people. Because it is possible to be healthy in

mind and spirit even though the body may be frail, this puts the emphasis on the need for a broader definition of health. Indeed, there is now widespread support for a broader model of health as it puts less emphasis on decline and decay of the organism and more on interactions with the physical and social environment. So disease and decline are not inevitable in old age and not attributable to age *per se* but to the conditions in which people age and in which they have lived their lives. Pursuing the broader definition of health proposed by WHO - as a state of complete physical, social, and mental well-being (WHO, 1985), in 1992, the Royal College of Physicians and the British Geriatric Society recommended standardized assessment scales to assess the health needs of the elderly, which include activities of daily living (ADL; self-care, mobility, instrumental activities), mental health functioning (cognitive and psychiatric symptoms), psychosocial functioning (emotional well-being), physical health functioning (self-perceived health, morbidity, activity levels), social resources, economic resources, and environmental resources.

### **2.2.3 Living arrangements and support**

As they get old, older people tend to be more dependent and to need care and support from others either within the family or society. In addition, poverty is one of the most distinctive features of old age in addition to a decrease in functional capacity and an increase in use of statutory social and health services (Victor and Vetter, 1986). Association of old age and poverty is also evident in developing countries (Barrientos and Lloyd-Sherlock, 2002b; Barrientos et al., 2003). Barrientos et al (2003) reviewed studies conducted in developing countries and concluded that poverty in later life is associated with poor access to paid work, basic services such as health care, and household and community networks. Older people in developing countries, especially those in low income countries, are more likely to remain in paid work than those in developed countries, but are poorly remunerated. Common priorities in service provision and delivery in the developing world are still focused on young children and their mothers. Access to family and community networks is crucial for the well-being of the elderly in developing countries. The household is a major source of old age support in developing countries where institutionalization of social support is less developed. Communities are also important source of support, particularly for older people with no children or family.

In order to maintain the well-being of older people, intergenerational transfers either within or from outside the family are crucial (Hermalin, 2000). Co-residence or living with at least one child or other kin is one form of family transfer among many others, such as financial support or care provided to the elderly by the kin group or family. Social transfers include pensions, disability income, health payments and transfers in the form of subsidies for institutionalization, home care and housing. Both social and family transfers are the most important sources of support for the majority of the elderly (Palloni, 2000).

Social transfers are prominent in the developed world where co-residence is low but institutionalization of social transfers is well established. The proportion of elderly living alone or with a spouse in Northern America, Western Europe, and Northern Europe is approximately two-thirds compared with less than 10% in most countries in Asia and Latin America (Hermalin, 2000; Palloni, 2000; De Vos and Sandefur, 2002; Audenaert, 2003). Industrialization and modernization, in addition to cultural norms of independence, affect living arrangements of the elderly in developed countries. Nevertheless, other forms of support from their family are still substantial in these countries even though co-residence and financial support are relatively low compared with those in the developing world (Kunemund and Rein, 1999). More than 70% of the elderly with living children and no child in their household in Canada, Japan, UK, Germany, and USA in 1991, received some form of service or help from their families (Kunemund and Rein 1999). Results from this study also revealed that the giving of services by the elderly to their adult children increased the probability of receiving help back from them.

In developing countries, institutionalization of social transfers is less developed or absent, so elderly people in these countries rely mainly on family transfers and their own savings. However, it should be noted that intra-familial transfers are not in only one direction as older people also often provide care and support to their families such as raising their grandchildren, helping out with money or providing care to their sick children, and taking responsibility for major household functions (Hermalin et al., 1998; Knodel et al., 2001). Therefore, the incentives for residing in the same household may apply to both the elderly and their children. Various studies in relation to living arrangements and family support in Asia reveal that co-residence and intra-familial transfers are still widespread and dominant (Casterline et al., 1991; Knodel and Chayovan, 1997; Knodel et al., 2000). However,



changes in living arrangements over time from generation to generation in these countries are also observed (Frankenberg et al., 2002; Teo et al., 2003b). A trend of an increasing proportion of elderly adults living alone in developing countries is observed but with a smaller magnitude and from lower baseline values compared with developed countries (Palloni, 2000). Because of a rapidly aging population, together with urbanization, a few developing countries, i.e. Argentina and South Africa, have institutionalized some forms of social transfers such as pension for their older population. Institutionalization of social transfers may be inevitable for developing countries in the near future when they reach an advanced stage of an aging population as is currently faced by the developed world. Whether providing social transfers will crowd out intra-familial support and erode family bonds is an issue of concern; however, crowding out has not been observed in developed countries (Kunemund and Rein, 1999). In developing countries, cash transfers from the pension system may increase the autonomy and position of the elderly in the household. Furthermore, evidence from South Africa shows that this income plays an important role in supporting households, especially to support care of HIV/AIDS sufferers and their children (Lund, 2002).

## **2.2.4 Health care and use of health services among older people**

### **2.2.4.1 Health services for older people**

Health needs of older people increase with age, in relation to degenerative changes and proximity to death, resulting in increase in demands for and costs of health care for the elderly in contrast to their low ability to pay. This is the reason that all developed countries provide universal health care coverage for their older citizens; this issue will be reviewed later in section 3.2.3 below. Demand for health care reflects the perceived needs of the elderly; once individuals recognise the need for care, they will seek care perceived as appropriate to their needs if services are available and physically and financially accessible to them. However, some needs may not be met, particularly those inaccessible or not perceived as need. Some health conditions defined by medical professionals as needs (objective or assessed need) might not be perceived as needs by elderly individuals, such as urinary incontinence (Beguín et al., 1997; Melchior et al., 1998; Stoddart et al., 2001), dementia (Patel and Prince, 2001). Urinary incontinence is not regarded as a problem by the

general public or the government in many developing countries (Melchior et al., 1998). In Goa, India, Patel and Prince (2001) found that depression and dementia were widely recognized; however, neither condition was thought to constitute a health condition.

Health and social care facilities for the elderly in developed countries such as geriatric care, nursing homes, and home help services are much better developed than those in many developing countries. For example, in Japan, where there is the most advanced stage of an aging population, the Health and Medical Services Law for the Elderly was enacted in 1982 to provide comprehensive health and medical services, ranging from disease prevention to treatment and functional training, to elderly people aged 70 and over and bedridden elderly aged 65 and over (JICWELS, 1999). In some newly industrialized countries in Asia such as Hong Kong and Singapore, to address the concerns of increasing health needs in the rapidly aging population, a wide range of services have been developed. In 1998, Hong Kong commenced a new mode of services delivery for their older people by setting up one health centre and one health team in each district (Department of Health, 2001). Health centres provide primary care services of health assessment, physical check up, counselling, curative treatment, and health education to the elderly, while visiting health teams reach into the community and residential care settings to provide wellness programmes to increase health awareness of the elderly and their self-care ability. In Singapore, long-term care services are provided mostly by voluntary welfare organizations (VWOs) with government financial assistance; services include day rehabilitation, day care, geriatric units in hospitals, long-term care in community hospitals, chronic sick hospitals, and medical/ nursing homes (Teo et al., 2003a).

In developing countries, health care priorities are primarily focused on young children and their mothers, and seldom target the health care needs of older people (Barrientos et al., 2003). A limited supply of well trained family physicians and major deficiencies in the number of physicians and staff trained in geriatrics at primary level have been observed, such as in Lebanon (Abyad, 2001) and Thailand (Jitapunkul et al., 1993; Kamnuansilpa et al., 1999; Lloyd-Sherlock, 2002a). In such circumstances, needs of older people are less likely to be adequately met by the health care systems. To develop a new mode of health services for the elderly is also less feasible because of the scarcity of resources and there is high likelihood of providing lower quality of services. Integration of health care for elderly

people with established health services, particularly the existing primary health care systems (PHC) as well as training of professional staff and carers may be the better alternative for developing countries. There are several reasons to support targeting PHC as a strategy to strengthen services for the elderly in developing countries. First, access to primary care is a basic right of all ages in every country (WHO, 1998b). PHC is the unit of service provision close to the elderly and the cost of services is more affordable than hospital care. Second, in most developing countries, there is at least some infrastructure for primary care and personnel, even in rural areas. So there is no need to build up a new system and this is a financially efficient strategy. Third, the concept and scope of services provided in PHC put more emphasis on a broader definition of health with relevance to the needs of older people. Services for the elderly need to go beyond the scope of a medical model and to put more emphasis on raising the level of independence of the older person in terms of the normal activities of daily living, such as rehabilitation, functional training, etc. Fourth, most services for the elderly can be provided at primary care level and in communities without requiring expensive and complicated technology when primary care providers are trained for geriatric care. Last, PHC is located in the community and close to the elderly so it can be a good bridge for providing training and support and transferring information between informal carers and formal health providers. Thus, integration of geriatric services into the existing primary care setting together with training for providers and carers is regarded as an effective mode to meet the needs of older people, particularly those in rural areas.

### **2.2.4.2 Use of health services among older people**

According to the distinctive features of health and well-being of older people, understanding patterns of service utilization and factors determining service use are crucial in order to improve their access to care. Three broad approaches have been used in studying determinants of health services use by the elderly: the Behavior model, the Health Belief model, and the Organizational Constraints model. The Andersen Behavior model suggests that health services use is a function of three classes of variables: firstly, personal attributes that may predispose individuals to seek care such as demographic factors, social structure, and health beliefs; secondly, enabling resources such as income, insurance coverage, regular source of care, and barriers to care; finally, need-for-care factors as evidenced by

subjective (perceived) health and objective (assessed) health status and functional level (Andersen and Newman, 1973; Andersen, 1995). The Health Belief model suggests that health services use is determined by perceived susceptibility and severity of a health problem, perceived benefits and barriers to taking action, and cues that instigate appropriate behavior (Rosenstock, 1966; Becker et al., 1977). The Organizational Constraints model gives emphasis to incentives of both provider and consumer. It suggests that variation in use is indicated by the level of market competition and incentives for developing cost-effective alternatives for care, and personal choice or decision factors (Wennberg et al., 1982; Rossiter and Wilensky, 1983; Diehr et al., 1984; Wan and Broida, 1985). This third approach emphasizes the importance of supply-induced demand and the unit of analysis is usually based on areas, providers or health plans instead of individuals; for example, comparing utilization rates between health plans with different payment mechanisms or variations in surgical rates between hospitals or counties etc. Comparing these three models, the Behavior model is more comprehensive and frequently used since health beliefs and organizational structure variables have already been included in recent models. The model has evolved in 4 phases since the 1960s; details of the model in its final phase are shown in Appendix I.

The Andersen Behavior model was developed to assist the understanding of why individuals use health services; to define and measure equitable access to health care; and to assist in developing policies to promote equitable access (Andersen, 1995). The model measures realized access in terms of the actual use of services (Aday and Andersen, 1975). Equitable or inequitable access is defined according to which predictors of realized access are dominant. Access to health care is regarded as equitable when demographic and need variables account for most of the variance in utilization. Inequitable access occurs when social structure (e.g. ethnicity), health belief, and enabling resources (e.g. income) determine who gets medical care.

The concept of mutability of the three classes of variables in the Andersen Behavior model is important to assist in developing policy to promote equitable access (Andersen and Newman, 1973). Andersen and Newman (1973) pointed out that to be useful for promoting access, a variable must also be considered mutable, or point to policy changes that may bring about behavior change. Comparing the three classes of variables in the model,

enabling variables are the most mutable followed by health beliefs, while demographic, social structure, and need variables are the least mutable.

Appendix 1 provides a literature review of factors determining service utilization among older people<sup>2</sup>. The review reveals that predisposing, enabling and need factors have a differential ability to explain different types of service use among the elderly. Need factors are prominent in explaining more serious conditions, such as hospital service use; however, physician's judgment and incentives might be more influential in determining actual hospital admission and hospital days. Dental services are considered as more discretionary and would more likely be explained by social structure, beliefs, and enabling factors. For physician services, need factors are also prominent, but predisposing and enabling factors play a role since the conditions stimulating care seeking would generally be viewed as less serious and demanding than those resulting in inpatient care, but more serious than those leading to dental care. A similar pattern was identified in all countries; however, it is worth noting that enabling factors were relatively prominent in determining use of ambulatory care and hospital care in the United States such as having a regular physician or insurance coverage compared with other developed countries.

In general, there was a fairly small explanatory power of the Behavioral model in predicting service use among older people. This may be due to the emphasis on population characteristics in determining service use. Evidence reveals that a number of supply side factors, such as provider incentives, number of physicians, hospital beds, and high technology per population, also determine service use. However, considering access to care of the population, factors determining an individual's decision to use or not use health services are crucial for policy-makers and health administrators in improving the access to care of particular groups, especially the poor and vulnerable groups.

Methodological limitations might be another factor explaining the small explanatory power of the model. Most studies employed available secondary databases; therefore, only available variables can be included in the analysis. Another problem is the weakness of a

---

<sup>2</sup> Nearly all the studies reviewed were conducted in developed countries, with 70% conducted in the United States; only one study was from the developing world (Thailand).

cross-sectional survey in explaining the causal effect of these factors on service use, since the relationship between service utilization and morbidity or health status can be in both directions in a cross-sectional study. Characteristics of demand are different for different types of service; in addition, some types of service are consumer-driven such as first contact care and emergency care, but some are driven by providers such as specialized visits, follow-up visits, and hospitalization. More specific service measurement might increase the level of prediction of the model. Recall bias and recall period are also crucial to the reliability and accuracy of self-reported illness and services use. Some weaknesses of cross-sectional survey and under-reporting of illness and services use might be corrected by better design of the questionnaire, for instance, providing details of presenting conditions and action taken by respondents for each problem, in addition to use of complementary qualitative methods.

Nevertheless, as nearly all evidence mentioned above came from developed countries, a different pattern of services used may be expected in Thailand and other developing countries according to heterogeneity in terms of economic status, health needs, pattern of family support, availability of services etc. Age and sex differences in service utilization might be more apparent in developing countries compared with those in developed countries due to difference in culture, norm, attitude, and less availability of social transfers. Area of residence and physical access is likely to be more prominent in determining service use in developing countries due to less availability of facility, poor public transportation and road condition in rural areas. Difference in system design, institutional arrangements, and benefit package of insurance scheme between countries is likely to affect service use of the elderly differently (this will be discussed in section 2.3.4). Disparity between perceived need and observed need may be more apparent in developing countries for some chronic conditions, i.e. urinary incontinence, being unrecognized as a health problem leading to them seek less care. Moreover, some health problems requiring professional diagnosis, i.e. diabetes and hypertension, are less likely to be perceived as need if they do not access to health care, particularly for elderly in rural areas; this may result in no difference in illness and service use by socioeconomic conditions.

Less availability of facilities and services for the elderly in developing countries, particularly in rural areas, means there is higher likelihood of unmet need for various

specific conditions of the elderly. When services specific to the needs of the elderly are not available and they do not perceive something as a health problem, then they do not report or use services. In this case, it is likely that need variables will be of less influence in *seeking care*. Therefore, all the differences between developed and developing country mentioned above are likely to result in greater prominence of predisposing and enabling factors in determining health care use of the elderly in developing countries.

## **2.3 The role of health insurance**

Health insurance provides two main basic functions, reducing financial barriers in access to effective health care when needed and effective protection of family income and assets from the financial costs of expensive medical care (Kutzin, 1998). Health insurance reduces health care costs faced by individuals at the point of use and so can eliminate financial barriers in access to services covered by the insurance. Thus, providing insurance coverage will enable access to care for those who were previously uninsured, especially for the poor. Insurance also provides protection against the *risk* that if expensive (relative to an individual or family's income) health care services are needed, the services will be available and of adequate quality, and the cost of using these services will not drive the family into poverty.

### **2.3.1 Universal Coverage: Enhancing the functions of insurance**

The notions of enhancing insurance function can be made more precise with an extension of the concept of coverage to include depth and breadth of coverage (Kutzin, 2000). Depth of coverage refers to the extent to which services are available to people without exposure to out-of-pocket payment (i.e. the degree of cost sharing required to obtain various services). Breadth of coverage refers to the proportion of the total population that has effective access and financial risk protection. Therefore, enhancing the insurance function can be done by broadening population coverage or deepening service coverage. Providing universal health care coverage by expanding the breadth and depth of coverage to all people will, theoretically, enhance the insurance function. However, expanding the depth and breadth of coverage is limited by the availability of resources and the efficiency with which resources are allocated and managed (Kutzin, 2000). Thus to enhance the functions

of health insurance, improving sectoral efficiency in the administration of the insurance function (revenue collection, pooling, and allocation and purchasing of health care) is also a means by which insurance protection can be broadened. Therefore, to achieve universal coverage with effective health care risk protection at the least cost possible, reforming the health care delivery and health care financing system is desirable in order to enhance the functions of insurance and sustainability of the system.

Kutzin (1998) proposed a useful descriptive framework, as shown in Figure 2.1, to assist in the identification and assessment of aspects of the health care system that have critical implications for the insurance functions. There are three main crucial aspects of the health care system: institutional features and resource allocation mechanisms, health system support, and benefit package.

**Figure 2. 1 Framework for policy analysis of insurance functions**

Revenue collection	Allocation mechanisms	Pooling / Purchasing organizations	Allocation/ Purchasing mechanisms	Services provision
Government revenue General revenue (central, local) Earmarked revenue  Social insurance  Private insurance  Out-of-pocket	Government revenue Historical / needs-based weighted capitation/ subsidized premium Social insurance Percent of salary or income/ risk adjusted allocation to funds Private insurance Risk-rated or community rated premium	Government MOPH (central, decentralized units) Local government Area Health Boards Social health insurance funds  Private insurance companies  Fundholding providers	Budgets (line item and global)  Salaries  Capitation  Case-based  Fee-for-service Mixed	Public, NGO, and for profit providers of services (e.g. hospitals, clinics, pharmacies)
<b>HEALTH SYSTEM SUPPORT</b>				
Pharmaceutical procurement, distribution, and management Technology assessment and physical assets management Regulation and the definition of standard				
<b>BENEFIT PACKAGE</b>				
Essential package Catastrophic costs Amenity services Access rules Cost sharing				

Source: Kutzin (1998, 2000)



Below each of the column headings are examples of possible options or arrangements of the system. The five columns across the top of the table represent the main institutional arrangements in relation to revenue collection, pooling, and allocation and purchasing of health care. One main feature of universal coverage is shifting from private finance, i.e. private insurance and out-of-pocket payment, to public finance, either general revenue or social insurance. Private voluntary insurance has a limited role in achieving universal coverage because of the problem of adverse selection (Kutzin, 2001). Lack of knowledge of individual health status leads private insurers to develop various techniques to limit this problem and prevent financial deficits, such as underwriting, risk rating, excluding pre-existing conditions, excluding high cost services etc. Private insurance can therefore detract from the depth and breadth of the insurance function for the population as a whole. However, private insurance may play some role for those opting out of the scheme and for supplementary uncovered services. Out-of-pocket payment also plays a role in cost sharing and uncovered services.

Pooling is another main feature of universal coverage and refers to the accumulation and management of revenues in such a way as to ensure that the risk of having to pay for health care is borne by all members of the pool and not by each contributor individually (WHO, 2000). Its main purpose is to share the financial risk between groups of people and funds. This is the principle of solidarity, cross-subsidies from the rich to the poor and from the healthy to the sick. A redistribution mechanism or risk adjustment is essential in countries where there are multiple competing social insurance funds such as in Germany, Japan, Argentina, Israel, and the Netherlands. It aims to maintain the equity principle at the same time as providing consumer choice and improving sectoral efficiency through competition among funds. Without a redistribution mechanism, some insurance funds with a high proportion of high risk groups, such as retired beneficiaries, will not be able to sustain their functioning.

Purchasing is the process by which pooled funds are paid to providers in order to deliver a specified or unspecified set of health interventions. Purchasing can be performed passively or actively. Passive purchasing refers to allocating following a predetermined budget or just paying bills presented. Active purchasing involves a continuous search for the best ways to maximize health system performance by deciding which interventions should be purchased

(benefit packages), how (payment mechanisms), and from whom (public, private). What is needed is for allocating or purchasing institutions to use their financial power to promote efficiency and high quality of service delivery. Elements of active (strategic) purchasing or managed care include providing targeted financial incentives through the use of provider payment methods, imposing a primary care gatekeeper role, maintaining provider profiles, contracting with selected providers who meet defined quality and cost criteria, undertaking utilization review and quality assurance activities, and promoting the use of standard treatment protocols (Kane, 1995).

The budgeting and provider payment mechanisms are an essential part of the purchaser-provider interactions which provide different incentives for providers and bring about different implications for access to care and costs. Table 2.1 illustrates common budgeting and payment mechanisms and their effects on provider behaviour.

**Table 2. 1 Payment mechanisms and provider behavior**

Provider behaviour Mechanisms	Prevent health problems	Deliver services	Respond to legitimate expectations	Contain costs
Line item budget	+/-	--	+/-	+++
Global budget	++	--	+/-	+++
Capitation (with competition)	+++	--	++	+++
Diagnostic related payment	+/-	++	++	++
Fee-for-service	+/-	+++	+++	---

Key: +++ very positive effect; ++ some effect; +/- little or no variable effect; -- some negative effect; --- very negative effect.

Source: WHO (2000)

The more aggregated the payment is, the more likely it is that incentives to contain cost will be in opposition to sufficient service provision. Fee-for-service retrospective payment provides the greatest incentives to deliver services and respond to legitimate expectations; however, it shifts all the risks to purchasers and brings about cost escalation (Barnum et al., 1995; WHO, 1999). While closed-end prospective payment such as line item budget (including salary), global budget, and capitation, provide less incentives to deliver services and shift all the risk to providers; they provide the greatest incentives to contain costs. Case based payment such as Diagnosis Related Groups (DRG) falls in between the two groups; it

provides moderate incentives to deliver services, respond to legitimate expectations and contain costs (Cromwell et al., 1997). As shown in Table 2.1, no single budgeting or payment mechanism can meet all the objectives simultaneously. Therefore, a mixture of payment approaches, such as point system for ambulatory care (fee-for-service under global budget) or DRG weighted global budget for inpatient care, may be able to counter balance the strengths and weaknesses of each method. In addition, different payment mechanisms also require different levels of intensity of information, managerial capability, and regulation.

The availability and distribution of providers has a direct effect on access to care and is critical for the attainment of universal health care risk protection. Universal coverage is meaningful only when there is reasonable physical access to services. This implies that insurance involves more than just financial protection. To be truly protected against the risk of ill health, there must be physical as well as financial access to care. Physical access is usually problematic among people in remote areas; in order to improve physical access among them and enhance insurance functions, outreach services and other strategies to mobilize services to these particular groups are needed. This is crucial for older people since they usually have limited physical mobility, so expanding services to reach them near their home will enable access to care for them as well as enhance the insurance function.

Health system support functions such as pharmaceutical management, technology management, and regulation and standard setting are crucial to promote efficient use and equitable distribution of resources. So these functions can also contribute to the breadth and depth of insurance functions. Although these functions can be implemented by a specific insurance organization, they are better carried out by a central organization, i.e. the MOH, on behalf of the entire system for the population as a whole, to avoid dilution of effectiveness of these functions. Over-investment in medical technology in some areas or double standards of care between schemes may occur if particular schemes are allowed to set and manage these functions by themselves.

The benefit package includes not only the list of services that the population is entitled to, but also access conditions such as the requirement of a referral system in order to access non-emergency care at a tertiary hospital, and levels of cost sharing. This means that for

uncovered or partially covered services, people have to pay out-of-pocket to cover the full costs or partial costs of these particular services. Therefore, the benefit package will directly affect the depth of coverage and insurance functions of particular insurance schemes. The Korean case is a good example of rapidly broadening insurance coverage with a limited depth of coverage, resulting in high level of out-of-pocket payment in spite of universal health coverage (Kutzin, 2000). The National Health Insurance system of the Republic of Korea has very high levels of explicit cost sharing for services in the benefit package, and entirely excludes from the coverage many expensive high technology services. In 1997, out-of-pocket payment, on average, accounted for 39 and 61% of total inpatient and outpatient care expenditures respectively (Kwon, 2002). Thus, while Korea has expanded insurance coverage to the entire population, the protection offered to the population is quite limited. Therefore, in countries where all the population are already covered by insurance schemes, there is always scope for expanding depth of coverage, by including additional services or reducing level of cost sharing in order to improve access to health care and protection against the potentially high costs of services.

In brief, all the three aspects – financial arrangements, health system support, and benefit package – have direct or indirect effects on the functioning of health insurance. Thus, how effectively the universal coverage policy performs the two basic functions of enabling access to care and providing financial protection depends partly on how these components are arranged, in addition to management capacity such as staff, resources, and administrative tools (i.e. information system).

### **2.3.2 Universal health coverage for older people**

All developed countries including the United States provide universal health coverage for their elderly citizens. In the United States, health care is treated as an individual's responsibility and preference, except in the case of the elderly and the very low income groups. In 1998, 19% of the non-elderly population in the United States was uninsured, while older adults aged 65 and over were nearly all covered by Medicare (Schoen et al., 2000). In the developing world, some countries provide universal or near universal health care coverage for their older population such as Israel, Argentina, Chile, and Thailand. Even where universal coverage does not exist, many countries exempt their older

population from fees in public facilities either by a means test or an age criterion (Russell and Gilson, 1995). Although universal coverage of health care among the elderly has been achieved in developed countries and some developing countries, there are broad variations in structural organization, benefit packages, access conditions, and cost containment measures.

Sources of finance to provide care for elderly people are usually mixed, such as social insurance funds, general and special taxation from local or national government, pension funds, and elderly households themselves. As the costs of care for them are high while they can contribute little, government subsidy or cross-subsidy from working people's payroll taxes, or transfers from health insurance funds or pension funds, are common in all countries. Employed persons and their employers usually pay high payroll taxes in excess of their expenditures in order to subsidize the elderly and disabled. In Germany, a standard surcharge has been imposed on working people by the government to cover the costs of elderly and disabled members. In some countries such as France, Germany, and Holland, regular procedures were established to transfer money from sickness funds with extra cash to funds with many pensioners (Glaser, 1991; Rice and Smith, 2001). In Japan, social medical insurance funds contribute equally with government to funding health services for the elderly (JICWELS, 1999). Pensioners in some countries also have to contribute to the funds from their pension funds as employers do not contribute to the funds after the employee's retirement (e.g. Austria, Belgium).

Statutory health insurance in most countries was designed to be financially self-supporting and independent of government budgets. However, increases in health care costs and the extension of health insurance to the poor, the unemployed, and pensioners have required government to fill shortfalls with grants to the funds or hospitals, or to pay into sickness funds on behalf of the impoverished. The Medical Savings Account (MSA) has been promoted in some countries, such as the US, Singapore, and China (Prescott and Nichols, 1997). The concept is to distribute risks over the life span of individuals and families rather than cross-sectionally, across individuals and families in a given year. Proponents of this concept argue that by this means, people will realize the need to maintain and improve their own health and moral hazard will be reduced. However, this concept does not go along with the concept of social solidarity (sharing risk between the rich and the poor, the healthy

and the sick) and fairness of health care financing (financing health care according to ability to pay).

Health care for older people in most countries is financed through the same programme as the non-elderly, using the same providers, facilities, and benefit package. The alternative for addressing health care needs of the elderly is to design a health care program explicitly for them, as in the United States, Argentina, and Japan. The US Medicare program has been established since 1965 as an amendment to the Social Security Act and primarily finances health care to those 65 and older (Centers for Medicare & Medicaid Services, 2003). In Argentina, the Integrated Healthcare Programme (PAMI) was set up in 1971 as a health insurance programme specifically targeting elderly people, and has become one of the largest components of Argentina's state welfare system (Lloyd-Sherlock, 1997; Lloyd-Sherlock, 2003). Argentina and the U.S. are the only two countries that have health funds specifically concerned with older people (Lloyd-Sherlock, 2002b); this is probably because there is no universal social insurance scheme. The Health Services System for the Elderly in Japan was developed in 1983 to provide comprehensive medical services to elderly people aged 70 and over and bedridden elderly aged 65 - 70, and other health services to people 40 years of age and over (JICWELS, 1999). The programme provides a specific benefit package of other health services for the elderly, i.e. health handbook, health education, counselling, health examination, functional training, and home visits. However, there is no specific contribution collected from individuals, but insurers contribute to support services for the elderly. The contributions from each insurer are calculated by assuming that they have the same proportion of older beneficiaries in each fund, not the actual numbers of the elderly in each fund (JICWELS, 1999) and these are paid to the Social Insurance Medical Fee Payment Fund as a pool together with contributions of all other groups. The principle is employed in order to equalize the risks between funds and prevent risk selection, similar to the equalization mechanism in the German health insurance system. This is because many insured persons leave their previous insurance funds to join the National Health Insurance Scheme after their retirement.

Provider payment methods vary from country to country; however, most countries employ more than one payment method to pay providers for different type of services with some modifications. For example, the National Health Service in the UK pays GPs by capitation

(age-differentiated fee); fee-for-service; allowances and target payments to encourage the provision of certain services. Both fee-for-service and managed care plans also exist under Medicare in the US. A major concern about provider payment relating to the elderly is its implications for access to and quality of care for the elderly. For example, without age-differentiated capitation, providers may have less incentive to register those with high risks, such as older people or those with chronic conditions, or have too much incentive to control costs, which reduces the quality of care provided. Moreover, one common problem among countries where universal health coverage exists is cost escalation; therefore, some forms of active purchasing exist in all countries in order to regulate and improve the efficiency and quality of the system (Kutzin, 1998).

**Table 2. 2 Choices of Medicare plan in 2003**

	<b>Original Medicare Plan</b>	<b>Managed Care Plan (like an HMO)</b>	<b>Private Fee-for-Service Plan</b>
<b>Costs</b> Total out-of-pocket costs	<b>High</b>	<b>Low to Medium</b>	<b>Medium to high</b>
<b>Extra Benefits</b> In addition to Medicare covered benefits.	<b>None</b>	<b>Most</b> Like prescription drugs, eye exams, hearing aids, or routine physical exams.	<b>Some</b> Like foreign travel or extra days in the hospital.
<b>Doctor Choice</b>	<b>Widest</b> Choose any doctor or specialist who accepts Medicare.	<b>Some</b> Usually must see a doctor or specialist who belongs in your plan.	<b>Wide</b> Choose any doctor or specialist who accepts the plan's payment.
<b>Convenience</b>	<b>Varies</b> Available nationwide.	<b>Varies</b> Available in some areas. May require less paperwork and have phone hotline for medical advice.	<b>Varies</b> Available in some areas. May require less paperwork and have phone hotline for medical advice.

Source: <http://www.medicare.gov/Choices/Overview.asp> access date: 29/09/2003

Under the UK National Health Service, acute care services are comprehensively covered, including prescription drugs, while Medicare in the US covers only hospital services. Medicare part A is mandatory hospital insurance financed through mandatory payroll taxes from employee and employer during their working years, while part B is supplementary

hospital insurance (paying physician services but not prescription drugs) financed by beneficiaries on a voluntary basis and subsidized by the government. The elderly can also purchase supplementary private insurance to cover prescription drugs and cost sharing, otherwise they can apply for Medicaid if they are poor or faced with catastrophic costs. There were three main health plans that Medicare beneficiaries could choose in 2003: the original Medicare Plan, the Managed Care Plan, and the Private Fee-for-Service Plan. The original Medicare Plan is offered by the federal government while the other two are offered by private health insurance companies under contract to Medicare. Choice of plan will affect costs, benefits received, choice of care, and convenience in access, as shown in Table 2.2.

Cost sharing is also common in most countries as a means of reducing the effect of patient demand on health care services, by making patients more cost conscious especially for drugs, meals, rooms etc. However, the elderly are totally exempted in the United Kingdom.

The role of private insurance also varies from country to country (Schoen et al., 2000). In the UK, private insurance plays a minor role since patients generally have access to a broad array of medical services without payment at the point of service. In Canada, the basic package is less comprehensive than in the UK; hence, private insurance plays a substantial role but mainly covers benefits left out of the basic public package. Patients in Australia and New Zealand also rely on private insurance to supplement public benefits, including more ready access to private physicians, specialists, consultants and hospitals. Wide variations in the practice of universal coverage, in turn, inevitably affect accessibility to care and financial risk for the elderly. Empirical studies in relation to service utilization and financial protection will be reviewed subsequently in the following sections.

#### Lessons for developing countries and Thailand

It is likely that appropriate system design and institutional arrangements i.e. sources of funds, management of funds, payment methods, and benefit package, will vary from country to country. A key issue is whether health care financing for older people should be kept separate, as in the US, or integrated. In countries where universal health coverage is achieved, there is no point to have a separate fund for the elderly since the cost of services for the elderly usually exceed their ability to pay and need subsidy from working



populations. Having a separate fund may result in discrimination against the elderly and breaks down the principle of solidarity of social insurance. In countries where universal coverage does not exist, it is reasonable to have a separate fund as a social protection for the elderly. Health services for the elderly are costly and unaffordable for the majority of them in a market system; moreover, private insurance is more likely to discriminate against the elderly by excluding them or charging a high premium rate. A fund to support services for the elderly in developing countries is likely to need subsidies from the government.

In an integrated insurance system, adequate payment for care of the elderly is essential through age adjusted payment, particularly in a capitation payment system. An unadjusted capitation may result in provider bias in service provision against the elderly and risk selection. Having an explicit policy and benefit package including comprehensive medical and health services for the elderly may ensure services are better planned and developed for the elderly.

In a system where there is more than one insurance fund, harmonization of payment method and level of payment is needed to prevent discrimination in service provision. This is particularly the case for Thailand; the Civil Servant Medical Benefit Scheme (CSMBS) pays providers by a fee-for-service while the Universal Coverage scheme (UC) employs capitation and DRG weighted global budget to pay outpatient and inpatient care respectively. It is likely that providers will favour the former which pays better than the latter. For cost sharing, it may not be appropriate to apply this to the elderly in developing countries since it aims to prevent over utilization while under utilization and unmet needs remain the problem in developing countries. However, it is likely that historical development and socioeconomic and political contexts in a particular country will determine the actual system.

### **2.3.3 Universal health coverage: Enabling equitable access to care**

#### **2.3.3.1 Defining equity in access to health care**

Access to care can be measured and interpreted in different ways. Access to health care is commonly defined in the US literature in terms of entering the health care system. Aday and Andersen (1975) proposed the terms “potential access” and “realized access”. Potential access is simply defined as the presence of enabling resources, i.e. availability of services,

insurance, income, transportation etc. Realized access is the actual use of services. Mooney (1983) and Le Grand (1982) argued that access to treatment and receipt of treatment are not identical. The former refers to opportunities open to individuals, which can usefully be thought of in terms of the money and time costs that are incurred in obtaining health services (Le Grand, 1982; Mooney, 1983). Equality of access then requires that all individuals face the same money and time costs in obtaining health care. However, two individuals may not use the same amount of medical care, even when their diagnosis and prognosis are the same, since their preferences may differ. Furthermore, as access costs will be higher for those with low incomes on the assumption that they also have a higher marginal utility of income, Le Grand (1982) proposed that access costs ought to be measured in terms of utility rather than money. Goddard and Smith argued that access is determined purely by supply side factors, and variations in access offered by the supply side might arise according to differences in availability of services, quality of care, costs, and information provided to different population groups (Goddard and Smith, 2001). In this sense, therefore, access is one of the factors influencing service utilization as service utilization is the interaction between supply and demand.

Although there is a distinction between access and service use, what is often meant when the term 'access' is used is indeed receipt of treatment (Wagstaff and Van Doorslaer, 1993; Waters, 2000). The rates at which services are actually used has been often employed to measure equity in health care (Aday, 1981; Van Doorslaer and Wagstaff, 1993; Mäkinen et al., 2000; Liu et al., 2002). Access has been often defined as the use of health care, conditional on the need for care, and need for health care has been frequently measured as self-reported morbidity by most studies (Pannarunothai and Mills, 1997; Waters, 2000; Ha et al., 2002; Liu et al., 2002). Health care is regarded as equitable when equal treatment is obtained for those with equal need (horizontal equity) or more treatment is received for those with higher need (vertical equity). However, most theoretical and empirical discussions of equity in health care have focused on horizontal equity rather than vertical equity (Van Doorslaer and Wagstaff, 1993; Waters, 2000).

### **2.3.3.2 Testing for and measuring equity of access**

Two main approaches have been commonly used by economists to assessing equity in health care, testing for inequity and measuring equity. Testing for inequity is a regression-based test of inequity in health care utilization measured in terms of any contact, quantity of services used, or expenditures (Wagstaff, 2000). However, this approach does not enable inequity to be quantified to compare across nations or over time. The second approach is to measure concentration of service utilization (as measured, for example, by imputed expenditures) of individuals adjusted for health need and ranked by income. The examples of this approaches are the Le Grand concentration index (Le Grand, 1978) and the standardized expenditure concentration index (Wagstaff and Van Doorslaer, 1993b; Van Doorslaer and Wagstaff, 1998).

An alternative approach commonly employed to assess equity in access to care, particularly for the elderly is the Andersen Behaviour model (Andersen and Newman, 1973; Andersen, 1995). The model suggests that service utilization is a function of predisposing, enabling, and need variables as mentioned earlier. Health care is regarded as equitable when use of services is primarily determined by need factors, independent of other factors that are irrelevant such as income, age, sex, or residential area.

### **2.3.3.3 Empirical evidence on equity of access**

Most of the studies in relation to equity in access to medical care among elderly people identified from the literature search employed the Andersen Behaviour model to assess inequity of access. Most studies reviewed are from the US and all of them are in English. Evidence in relation to equity in access to various types of medical care among older people in countries where universal coverage has been achieved is reviewed and summarized below.

#### *Physician visits*

Physician visits can be divided into patient-initiated and physician-initiated visits. Visiting general practitioners or visiting an emergency unit for acute illness is generally initiated by patients; however, access to specialists depends on GP referral in countries where the GP

acts as primary care gatekeeper; follow-up visits for chronic conditions are also physician-generated.

Evidence from the literature reveals that, in general, access to *primary care physicians* among non-institutionalized older people is achieved in most countries, such as the UK (Victor and Vetter, 1986), Spain (Fernandex-Mayoralas et al., 2000), Israel (Walter-Ginzburg et al., 2001), and Switzerland (Schellhorn et al., 2000). In the UK, Victor and Vetter (1986), employing the 1980 General Household Survey, found that, independent of disability, elderly receiving a supplementary pension (SP) were more likely to be receiving the services of a home help, but no differences were observed in the use of health services (services obtained from GP, chiropody, health visitor, and district nurse). However, no differences in social service use were observed when poverty was defined as 140% of the SP rate. They suggested that the increased use of social services by SP recipients might be due to cross referral between social departments and the DHSS. In Spain, equitable access to primary care is observed among older people; access to primary care is independent of age, sex, education, or area of residence, and mainly determined by health need variables, number of types of medicine taken and perceived health status (Fernandex-Mayoralas et al., 2000). A similar result is also found in Israel. Walter-Ginzburg et al (2001) assessed factors determining physician visits in the previous month among Jews living in Israel on January 1, 1989, aged 75 and above, and found that physician visits was associated solely with health and functional status: number of conditions, self-perceived health, and ADL. In Switzerland, where people have free choice in access to services provided by primary care physicians or specialists, Schellhorn et al (2000), employing a 3-year panel database (1993-1996) of non-institutionalized older people aged 75 and over in Bern, found that overall physician visits and primary physician visits were higher among the poor. They also found that individuals with supplementary insurance coverage used ambulatory health services more frequently than those without. However, they noted that this might be related to socioeconomic status and a person's threshold for seeking care as supplementary insurance covers only the costs for admission to private hospital.

In contrast, access to GP services among *elderly residing in nursing and residential homes* in the United Kingdom is problematic and raises serious questions about equity (Glendinning et al., 2002). Glendinning et al (2002) conducted a telephone survey in homes

for older people in 72 English primary care group/trust areas and found extensive variations in homes' policies and local GP services. GP visits on request were provided by at least some GPs in nearly all homes, and homes paying local GPs were more likely to receive one or more additional services (regular surgery held in home, medical reviews of residents, and review of residents' medication), over and above GPs' core contractual obligations. Payments to GPs raises some major equity considerations; a significant minority of residents are contributing towards the cost of their general medical care which is provided free of charge to everyone else.

In the United States, Medicare plays a substantial role in providing access to medical care for previously uninsured, women and minority (Hispanic and African American) older people (Dunlop et al., 2002; McWilliams et al., 2003). However, differences in access to care among elderly people in the US are evident across income groups, ethnicity, gender, and types of insurance coverage despite the public Medicare scheme implemented for nearly forty years (Kleinman et al., 1981; Miller, 1992; Hurd and McGarry, 1997; Dunlop et al., 2002). Kleinman et al (1981) found that there were large differences amongst race and income groups in obtaining ambulatory care: blacks and the poor were much more likely to use hospital clinics and less likely to use private physician offices or telephone consultations, and the poor also received less preventive care. Miller (1992) found that activity-limited elderly without Medicare private supplementary insurance, as well as those with supplementary insurance in the bottom and middle of the income distribution, had 15-32% fewer ambulatory care contacts than activity-limited persons with higher income and private supplementary insurance. More recently, Dunlop et al (2002) analyzed data from the 1993-1995 study on the Asset of Health Dynamics Among the Oldest Old (AHEAD) to investigate differences in the 2-year use of health services by gender and among non-Hispanic White versus minority (Hispanic and African American) ethnic/racial groups. They found that Medicare plays a significant role in providing older women and minorities access to medical services. However, controlling for predisposing factors and measures of need, significant gender and ethnic/racial disparities in use of medical services covered by Medicare existed. Hurd and McGarry (1997) found that elderly people with Medicare parts A and B and private supplementary insurance had highest probabilities of seeing a doctor;

those with only Medicare part A had a lower probability of a doctor visit; and those with no insurance had a considerably lower probability.

For *emergency care*, utilization of emergency care in Spain is best discriminated between users and non-users by need variables; however the old-old (75+ years), male, and elderly residing in urban areas are more likely to use emergency care (Fernandex-Mayoralas et al., 2000). In Israel, Walter-Ginzburg et al (2001) found that need variables were strongly associated with emergency room utilization. However, utilization was significantly lower among those living alone; they had 70% as much use as those who lived with a spouse. In the US, emergency care is frequently used by elderly who lack a regular physician (Wolinsky et al., 1983; Bazargan et al., 1998) and institutionalized elderly (Wofford et al., 1993). Disproportionately high use of the emergency department for non-emergency problems among the elderly and patients sent from nursing homes reflects the problems of accessibility to physician services in the US.

Access to *services provided by specialists* seems to be inequitable under the UK NHS (Bowling et al., 2001). Bowling et al (2001) found that, despite having indications for intervention identical to those of younger patients, older patients (aged >75 years) and women, independently, were significantly less likely to undergo exercise tolerance testing and cardiac catheterization. While clinical priority scores also independently predicted access to cardiac catheterization and coronary artery bypass graft surgery, considerable numbers of patients in high clinical priority groups were not referred for either procedure. In Switzerland where people have free choice in access to services provided by specialists, Schellhorn et al (2000) found that overall physician visits and primary physician visits were higher among the poor, while specialist visits decreased with age in contrast to educational level.

### *Hospitalization*

Hospitalization is more prominently determined by need variables compared with ambulatory care while predisposing and enabling variables play little role (Branch et al., 1981; Wan, 1982; Wolinsky et al., 1983; Evashwick et al., 1984; Blazer et al., 1995). Access to hospital services in the US is also less problematic compared with ambulatory care since hospital care is covered by Medicare. However, some predisposing and enabling

variables also determine the use of hospital care such as age (Branch et al., 1981), having a regular physician (Wan, 1982), transportation problems (Evashwick et al., 1984), income, and lack of supplemental insurance (Blazer et al., 1995; Broyles et al., 2000). Broyles et al (2000) assessed distributional inequities in access to care among a representative sample of adults residing in Oklahoma, by comparing the medically vulnerable to the less vulnerable with respect to their use or nonuse of hospital care and, among those admitted, the number of days of care consumed. Controlling for need, enabling, and predisposing factors, the results indicate that the use of services by the poor, the elderly who lack supplemental insurance, and the uninsured is incongruent with their health status. In Spain, hospital admission is predominantly associated with a poorer perceived state of health and with suffering some form of limitation in daily mobility-related activities (Fernandex-Mayoralas et al., 2000). However, the discriminant function also contains other variables that have less explanatory power; for example, males and those with more education are more likely to be admitted to hospital. In addition, the use of hospital services is more frequent in urban settings. In Israel, hospitalization is solely determined by need variables such as number of conditions, subjective health, ADL, and level of physical activities (Walter-Ginzburg et al., 2001).

Evidence suggests that use of ambulatory and inpatient care among older people in the US does not vary by urban-rural residence, but a major difference in access to care by urban as compared with rural residents is the cost of obtaining health care (Blazer et al., 1995). Regarding barriers to access, Blazer et al (1995) found that cost remained a reason for delaying care in rural areas, although Medicare was widespread. The availability of Medicare and Medicaid does not eliminate all costs as a barrier to care, especially in rural areas.

### *Services not covered or partially covered by the insurance*

Access to services not covered or partially covered by health insurance is more problematic, such as dental care in most countries and medication in the US. Inequity of access to dental care is evident among Spanish elderly as use of dental care is mainly explained by predisposing and enabling variables; the use of dental care is a function of having a higher level of education, living in an urban environment, being active and not

suffering any personal care limitation (Fernandex-Mayoralas et al., 2000). Inequity in access to dental care among older people in the US is also evident as it is not covered by Medicare; use of dental care is predominantly determined by predisposing and enabling variables such as income, education level, and occupation (Branch et al., 1981; Evashwick et al., 1984; Kassab et al., 1996; Dunlop et al., 2002) .

Inequity in access to medication in the US is also evident. The elderly with higher incomes and better health insurance coverage are more likely to medicate common health problems than those with lower incomes and less comprehensive coverage (Stuart and Grana, 1995; Stuart and Grana, 1998). This is particularly the case for expensive drugs: elderly Medicare beneficiaries with coronary heart disease who lack drug coverage have disproportionately large drug expenditures and lower use rates of statins, a class of relatively expensive drugs that improve survival (Federman et al., 2001). Comparing access to care among elderly people in five nations, Australia, Canada, New Zealand, the United Kingdom, and the United States, elderly in the US, on average, are more likely to have not filled a prescription for financial reasons compared with the elderly in the other countries (Donelan et al., 2000).

In summary, evidence from this review suggests that, in most developed countries where universal coverage is achieved, access to services fully covered by the insurance among older people is equitable such as primary care and hospitalization; however, differences in access still exist for specialist care, clinical preventive care, and partially covered or uncovered services. Lower utilization of specialist care fully covered by the insurance may be determined by both supply and demand factors. In countries where primary physicians act as gatekeeper, demand for and use of specialist care may be more influenced by physicians; whether primary care physicians refer patients and whether specialists provide care to them. However, the similar disparity in Switzerland where there is free access to specialists suggests that patients' perception also influences the demand for specialist care. The US Medicare plays a substantial role in providing access to health services among those previously uninsured; however, limited depth of coverage results in inequitable access to health care among its beneficiaries. Different performance of universal health coverage in terms of access is therefore determined by the comprehensiveness of the



benefit package and the system design of a particular country, as well as demand factors specific to the country.

In developing countries like Thailand, it is expected that providing universal coverage for the elderly will achieve equity in use of primary care amongst the elderly. However, the effect may be less pronounced when different types of facilities are taken into account due to difference in health infrastructure by area of residence (details of health infrastructure will be shown in next chapter). Like most developing countries, physical access is expected to be more influential in determining use of hospital care, services provided by specialists, and emergency care.

### **2.3.4 Universal coverage: Financial protection**

#### **2.3.4.1 Defining fairness of health care financing**

Fairness of health care financing is one intrinsic goal of health systems (WHO, 2000). Fair financing in health systems means that the risks each household faces due to the costs of the health system are distributed according to ability to pay rather than risk of illness. This can be interpreted in terms of both vertical equity (the requirement that persons or families of unequal ability to pay make appropriately dissimilar payments for health care) and horizontal equity (the requirement that persons or families of the same ability to pay make the same contribution) (Wagstaff and Van Doorslaer, 1993a). In addressing the issue of vertical equity, health care is regarded as equitable or fair when the relationship between ability to pay and payment is progressive - the proportion of income paid out for health care rises as the level of income rises - and unfair when it is regressive. However, how progressive it ought to be is unclear as there is no clear policy statement on this particular issue.

A health system, in which individuals or households are sometimes forced into poverty through their purchase of needed care, or forced to do without it because of the cost, is also unfair. The first condition is the implication of large unexpected expenses in relation to income, while the latter is a barrier to access mentioned in the previous section. Catastrophic expenditures are undesirable and refer to out-of-pocket payment of a particular treatment action or sum of actions representing a substantial proportion of an individual's or households' ability to pay (Wyszewianski, 1986a). The terms 'catastrophic

cases' and 'high cost cases' are sometimes used to refer to the same thing; however, they are not identical. The term high cost cases is often used in insurance management and sometimes called catastrophic insurance. High cost cases refer to expensive medical care when an event or a sum of events in a period of time is greater than a previously determined expenditure threshold. Most high cost cases are catastrophic for individuals if out-of-pocket payment is made, but catastrophic cases are not necessary high cost. Medical care which is not expensive for most people might be catastrophic for the poor.

Both definitions of fairness mentioned above require a definition of "ability to pay". Previously, household pre-tax income has been commonly used to represent households' ability to pay. Recently, the term capacity to pay has been proposed by WHO (WHO, 2000) by arguing that household's capability to pay should exclude unavoidable costs to maintain subsistence, such as expenditures required for food, minimal clothing and shelter (Murray et al., 2000). Moreover, they argue that capability to pay should be defined in terms of effective income rather than current income. In practice, household expenditure may be employed instead of household income, and non-subsistence income is simply calculated by subtracting household expenditures on food from total household expenditures.

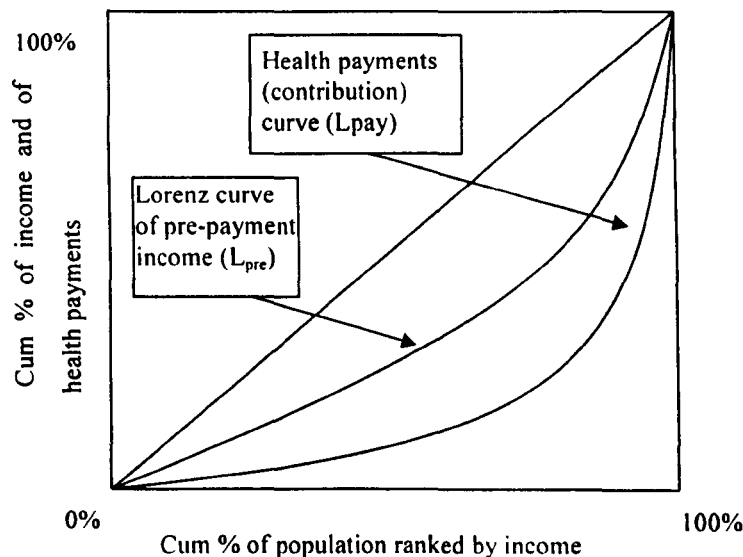
#### **2.3.4.2 Measuring progressivity in the finance of health care and catastrophic expenditure**

Progressivity in the finance of health care can be measured by either tabulations of the proportion of income (pre-tax income/non-subsistence income) spent on health care by each income group or by a progressivity index, e.g. Kawani's progressivity index. The first approach is to compare the proportion of income spent on health care or the share of income spent on health care to the share of income received by each income group, i.e. deciles or quintiles. When the proportion of income spent on health care by each income decile falls continuously as one moves up the income distribution, then the finance of health care will be regarded as regressive and unfair. Similarly, it is unfair when the share of the total financing burden borne by lower income groups exceeds their share of society's income, whilst the share borne by the top groups is less than their share of society's income. The limitation of this approach is that it cannot answer how much more (or less)

progressive one system (or source of finance) is than another. At best it can only indicate whether a system is progressive, regressive or proportional.

The second approach to measure progressivity of the finance of health care is employing progressivity indices. A variety of such indices have been developed in the literature; however, what has been commonly used recently is Kakwani's progressivity index. Kakwani's index is based on the extent to which a source of finance departs from proportionality and can be illustrated by Figure 2.2. The approach starts by plotting the Lorenz curve of pre-payment income<sup>3</sup> and the payment concentration curve. The Lorenz curve plots the cumulative proportions of the population ranked by income against the cumulative proportions of pre-payment income. Correspondingly, the payment concentration curve plots the cumulative proportions of the population ranked by income against the cumulative proportions of health payments. The Kakwani index ( $\pi_k$ ) is defined as the concentration index of payments ( $C_{\text{pay}}$ ) minus the Gini coefficient for pre-payment income ( $G_{\text{pre}}$ ) which is twice the area between the Lorenz curve and the payment concentration curve<sup>4</sup>.

**Figure 2. 2 Kakwani Index of Progressivity**



<sup>3</sup> May be income, expenditure, or other measure of capacity to pay.

<sup>4</sup> The Gini coefficient is twice the area between the Lorenz curve and the line of equality (or the diagonal), whilst the concentration index is analogously defined but with reference to the concentration curve.

If the health system is progressive, as shown in Figure 2.2 (the payment concentration curve lies outside the Lorenz curve), Kakwani's index is positive, and the opposite if the system is regressive (the payment curve lies inside the Lorenz curve). The value of the Kakwani index ranges from -1 to +1. As there are multiple sources of finance in all countries, a useful property of Kakwani's index is that the overall index for a financing system is a weighted average of the indices for the individual sources, where the weights are the proportions of each source in total revenue (Wagstaff, 2000). Thus the progressivity characteristics of a health care financing system depend on the proportion of total revenues raised from each source and the degree of progressivity of each of these sources.

For catastrophic payment, even though the level at which health care costs become catastrophic is debatable, it is commonly defined as catastrophic when it exceeds a substantial proportion of household ability to pay as measured by household income (or expenditure) such as 10% (Songer et al., 1997; Ranson, 2002), 15% (Wyszewianski, 1986a), or 20% (Liu and Perozek, 1991). WHO suggests health expenditure is called catastrophic whenever it is greater than or equal to 40% of the capacity to pay (household incomes or expenditures minus food expenditures) (Kawabata et al., 2002).

#### **2.3.4.3 Empirical evidence on fairness of health care financing**

As the health care system is usually financed by more than one source, the Kakwani progressivity index is often used to compare equity in the finance of health care between different sources in particular countries, i.e. taxation, social insurance, private insurance, and out-of-pocket payments. It is also commonly used to compare progressivity of overall finance in particular countries over time or between countries. Such studies are usually done at macro (country) level rather than at subpopulation level. In general, direct taxes are progressive as the taxation rate is progressive while indirect taxes are regressive, so the finance from general taxes will be progressive if the majority of taxes come from direct taxes as in most developed countries. Social insurance is also progressive in most developed countries, except in Germany and the Netherlands where the higher income groups can opt out of the compulsory sickness fund insurance (Wagstaff, 2000). Private insurance can be progressive or regressive, depending on the type of benefits covered by

the insurance and the groups of people who purchase it. Out-of-pocket payments are the most regressive means of raising revenue. Thus whether the overall finance of health care is progressive or regressive depends on the proportions of sources of finance and characteristics of each source in a particular country.

Evidence from countries worldwide reveals that there is an overall positive relationship between the proportion of households with catastrophic health expenditures and the share of out-of-pocket payments in total health expenditure (Xu et al., 2003). Xu et al (2003) employed data from household surveys in 59 countries to explore variables associated with catastrophic health expenditures as measured by those greater than or equal to 40% of capacity to pay. They found that the proportion of households facing catastrophic expenditure increased as share of out-of-pocket payment increased. Moreover, at any level of the share of out-of-pocket payments in total health expenditure, the proportion of households facing catastrophic health expenditure varied substantially. As the volume of total health expenditure met by out-of-pocket payments increases, the range of catastrophic payments also increases. Holding everything else constant, the study indicates that the probability of catastrophic payments would be greater where levels of poverty and health care use are higher.

Most studies relating to equity in the finance of health care and catastrophic health care expenditures among elderly adults are concentrated in the US. Wyszewianski (1986) assessed the characteristics of families with catastrophic health care expenditures in the US in 1977. The author found that families with catastrophic health care expenditures represented only a small percentage of all families, but they accounted for a disproportionately large share of total health care expenditures. Nevertheless, the actual amounts spent out of pocket by most of these families are relatively small. Modest sums are financially burdensome to these families because they are more likely to be low-income, to be headed by someone who is not employed, and to be headed by someone 65 or older (Wyszewianski, 1986b). Among older people, even though a greater share of their total expenditures was covered by Medicare and the actual amounts spent out of pocket by them were relatively small, the payments were financially burdensome to these families.

Evidence shows that Medicare promoted equity of out-of-pocket expenditures<sup>5</sup> on health care among elderly persons over the 1980s (Rubin et al., 1995). Rubin et al (1995), using Consumer Expenditure Survey data for 1980-1981 and 1989-90, compared out-of-pocket health expenditures of elderly and non-elderly households over the past decade. They found that increases in out-of-pocket medical care expenditures over the 1980s were mainly for insurance premiums rather than medical goods and services. However, out-of-pocket health care spending is a substantial burden for most Medicare beneficiaries, especially for the low-income elderly who are not receiving Medicaid assistance (Gross et al., 1999). Almost 60% of beneficiaries with incomes below the poverty level did not receive Medicaid assistance in 1997 and spent, on average, about half their income out-of-pocket for health care. In addition, 75% of beneficiaries with incomes between 100 and 125% of the poverty level and not enrolled in Medicaid spent an estimated 23-30% of their income out-of-pocket on health care.

Medicaid coverage helps to reduce burdens of out-of-pocket payments among the elderly poor (Selden and Banthin, 2003). Selden and Banthin (2003) examined health care expenditure burdens of elderly adults using data from the 1987 National Medical Expenditure Survey and the 1996 Medical Expenditure Panel Survey. They found that despite rapid increases in medical care prices, the percentage of elderly adults facing burdens over 20% of disposable income remained essentially constant at 20.9% in 1987 and 22.9% in 1996. The percentage with burdens exceeding 40% of disposable income was 7.3% in 1987 and 7.9% in 1996. High expenditure burdens were more prevalent among elderly adults who were poorer, older, female, higher risk, and covered only by traditional Medicare. Medicaid coverage helped to reduce burdens among the elderly poor, yet incomplete Medicaid take-up in 1996 left approximately 1.3 million elderly adults eligible for Medicaid but covered only by traditional Medicare.

---

<sup>5</sup> Out-of-pocket spending is defined to include Medicare deductibles and coinsurance; premiums for private insurance, Medicare Part B, and Medicare HMOs; payments for non-covered goods and services; and balance billing by physicians. It excludes the costs of home care and nursing facility services, as well as indirect tax payments toward health care financing.

There is strong evidence that universal coverage systems provide financial protection to the older, sicker populations and reasonable access to care (Donelan et al., 2000). Comparing access to and cost of care among older people aged 65 and above in Australia, Canada, New Zealand, the United Kingdom, and the United States, Donelan et al (2000) found that, across the five nations, less than 10% of elderly said that it is extremely or very difficult to get care and only 6% or fewer reported a problem of paying their medical bills. The financial protection afforded by the US Medicare is evident by comparison with 1998 data for the non-elderly uninsured in the United States; more than 40% of the non-elderly uninsured reported problems paying medical bills (Schoen et al., 2000). Compared with other nations, the US has a significantly greater proportion of its elderly people with no drug coverage at all and a significantly higher proportion of elderly persons with high uncovered prescription drug costs. In addition, the higher the amount of monthly out-of-pocket spending on drugs, the greater the proportion of older people who reported not filling prescriptions and problems paying medical bills.

In summary, US experience reveals that the non-comprehensive benefit package of Medicare (lack of depth of coverage) in addition to under-coverage of Medicaid (lack of breadth of coverage) results in inequity in the finance of health care and a greater proportion of catastrophic health care expenditure among the poor elderly than the non-poor elderly.

Evidence from previous studies in the general population in Thailand revealed that there was a decreasing trend in inequity in the finance of health care; however, inequity remained (Pannarunothai and Patmasiriwat, 2001). Evidence amongst the elderly on this matter does not exist. However, focusing on older people, it is expected that inequity in out-of-pocket payment is more pronounced due to the relatively high health needs and high cost of care amongst them. Moreover, including the non medical cost of obtaining care in the analyses is likely to make this problem more evident.

## **2.4 Conclusion**

This chapter has reviewed literature relating to the distinctive features of the elderly and the role of universal health coverage insurance in enabling access to care and financial protection for the elderly. The relatively high health needs and high costs of care among

elderly persons according to the distinctive features of their health problems, whilst they can pay little, means that governments in various countries play an active role in the finance of health care for them. Familial transfers and social transfers also play a crucial role in the health and well-being of older people. Review of the literature reveals that universal health coverage plays a substantial role in enabling access to needed care among older people and protecting them from financial catastrophe as a result of use of health care. However, how effectively insurance can perform these two basic functions depends on the breadth and depth of coverage in addition to institutional arrangements, system design, and support.

All studies reviewed were conducted in developed countries, particularly in the US, where the health care system is well developed and resources are available, in addition to better socioeconomic conditions among the older population. Little is known about the role of public insurance in enabling access to health care and protecting the elderly from catastrophic expenditures in developing countries, especially the poor elderly and those in remote areas. Differences in levels of socioeconomic development, culture, attitudes, living arrangements, and social support exist between developed and developing countries. Moreover, availability of resources and distribution and management capabilities are also quite different between developed and developing countries. These differences inevitably affect the insurance function of universal health coverage in developing countries. Therefore, studying the role of universal health coverage in enabling access to care and financial protection for older people in a developing country may help fill the gap in knowledge.



## **CHAPTER 3: THE HEALTH CARE SYSTEM FOR THAI ELDERLY**

### **3.1 Introduction**

Given relatively high health need in contrast to lower ability to pay among older people, the Royal Government of Thailand launched a free medical care policy for the elderly in 1992 under the Medical Welfare Scheme (MWS). The policy was further extended by the Universal Coverage Policy launched by the current government after the general election in 2001. The Universal Coverage Scheme (UC) or the 30-Baht scheme was launched by incorporating those previously covered by the Medical Welfare Scheme (MWS) and the Health Card Scheme (HC) with the uninsured. In order to provide the research background to the UC for the elderly and how the system works, background information in relation to the health service delivery system and health insurance for Thai elderly is presented in this chapter. Background information on socioeconomic development and population aging in Thailand is provided in the first section. The second section provides information on the health care system for older people including health service development and health insurance. The third section looks at access to and use of health services among Thai elderly in the 1990s before the UC scheme. Since there was limited existing evidence on this matter, a reanalysis of the 1991, 1996, and 2001 Health and Welfare Survey (H&W)<sup>6</sup> was done. The details of the UC, institutional arrangements and its main features, are presented in the fourth section followed by summary at the end.

### **3.1 Country background**

#### **3.1.1 Socioeconomic development**

Thailand is a middle-income country located in Southeast Asia with a fast growing economy during the three previous decades. The country began to shift from subsistence to cash crop farming and manufacturing industries with an export-led economy from the first

---

<sup>6</sup> This is a national representative survey conducted by the National Statistics Office every 5 years.

**Table 3. 1 Selected social, economic and health indicators**

	1970	1980	1990	2000
Population in millions	34.4	44.8	54.5	60.9
GNP per capita at current price (US \$)		687	1,509	1,926
% GDP growth rate at constant 1988 price		4.8	11.2	4.6
Distribution of GDP by sector (%)				
Agriculture	26		12	10.3
Construction			6.3	3.1
Manufacturing	16		27	32
Services, etc	49		49	55
Total government expenditure as % of GNP		19.1	13.6	17.4
% government budget spending on health		4.1	5.7	9.3
Income distribution				
Lowest 20%			4.2	5.5
Highest 20%			57.8	51.0
Urbanization				
% population in municipal areas	13		23	31
% population in Bangkok	8.9		10.8	10.4
Percentage of age group enrolled in education				
Primary	83		85	100
Secondary	17		40	83
Tertiary	13		16	38
Average annual growth rate of population (%)	3.0	2.1	1.7	1.4
% aged under 5	16.4	12.1	11.1	7.6
% aged over 60	4.6	5.4	7.4	9.5
Life expectancy at birth (years) (M/F)	58.2	63.1	68 <sup>1/</sup>	(66/ 72.4) <sup>2/</sup>
Crude birth rate (per 1,000 population)	39	21	17	12
Crude death rate (per 1,000 population)	9	6		5.9
Infant mortality rate (per 1,000 live births) (M/F)	73		(37.6/31.3) <sup>3/</sup>	(26.7/25.4) <sup>3/</sup>
Total fertility rate	5.5	3.6	2.3	2.1 <sup>2/</sup>
Old age dependency ratio	0.10	0.10	0.12	0.14
Total dependency ratio	1.04	0.83	0.57	0.51

Source: NESDB: Thailand Development Indicators 1990-2000,

MOPH: Public Health Statistics

NSO: Population and Housing census.

<sup>1/</sup> World Bank: World Development Report 1993<sup>2/</sup> WHO: World Health Report 2001<sup>3/</sup> NSO: The 1991 and 1995-6 Survey of Population Change (for figure in 1991 and 1995-6 respectively)

National Economic and Social Development Plan (NESDP) in 1961 (Wibulpolprasert, 2002). The Thai economy grew rapidly at an average rate of 7.8 % annually in real terms during the past three decades, with an average annual growth of 10.5% during the period 1987 - 1990 and of 8.3% during the period 1991 - 1996. In mid-1997, with the start of an economic crisis due to over-investment in non-producing assets, economic growth was – 0.4, –10.5, 4.4, 4.6, 1.8 and 5.2% in 1997, 1998, 1999, 2000, 2001 and 2002 respectively (NESDB, 2003).

Corresponding with the rapid economic growth, various social and demographic changes and improvements were also apparent such as urbanization, education, and health, etc (Table 3.1). The proportion of people living in urban areas increased from 13% in 1970 to more than 20% in the 1990s<sup>7</sup>. A higher educational level among the younger generations is apparent as the percentage of the age group enrolled in education increased substantially, especially for secondary and tertiary education. Improvement in health of the people is also evident during 1970 - 1990, life expectancy at birth increased, on average, by 5 years for every 10 years during this period. A similar trend of increase in life expectancy during 1970 – 1990 is also observed in the Survey of Population Change<sup>8</sup> in 1974-6 and 1985-6. Stagnation of increase in longevity of life during the most recent decade<sup>9</sup> is apparent; this was probably the result of the AIDS epidemic and accidents. However, inaccuracy of the official reports might exist for this matter. Declining infant mortality rates<sup>10</sup> is also apparent during the most previous decade; improvement in accessibility to safe maternal and child health services appears to play some role. However, little improvement in income distribution is seen during the same period.

---

<sup>7</sup> Urban is defined by municipality area. It is worth noting that the rapid increase of population in urban areas in 2000 was partly due to upgrading of all sanitary districts to municipalities.

<sup>8</sup> This is a national survey conducted by the National Statistics Office every 10 years in 1974-6, 1985-6 and 1995-6.

<sup>9</sup> It should be noted that life expectancy at birth from the survey in 1995-6 was higher than that in Table 3.1, 69.5 and 74.9 years for male and female respectively.

<sup>10</sup> It should be noted that the infant mortality rate from the demographic survey was much higher than that from vital statistics reported by the MOPH; only 6.2 / 1,000 live births was reported by the MOPH in 2000. Inaccuracy of the official report was due to incompleteness of birth and death registration. It is expected that reporting of newborn deaths will increase in the future because birth registration is required in order to get UC entitlements, budgets, and payments from the scheme, especially for newborns in intensive care units.

### 3.1.2 Population aging in Thailand

Following socioeconomic development, a demographic transition is also apparent in Thailand. Currently, Thailand is experiencing population aging – an increasing proportion of old people within the population. There has been a dramatic rise in people aged 60 and over during the three previous decades, increasing from 4.6% in 1960 to 7.4% in 1990 and 9.5% in 2000 (Table 3.1), and this is expected to be 15.1% in 2020 (UN, 1998). The rate of increase is faster than that of developed countries, doubling within only 30 years compared to more than 100 years in developed countries (Kinsella, 1997).

The current process is mainly determined by the rapid decline of total fertility (Jitapunkul and Bunnag, 1998), from 5.5 per 1,000 population in 1970 to 2.3 and 2.0 in 1990 and 2000 respectively. The success of the family planning programme together with changes in life-style, working, and living conditions associated with socioeconomic development are the explanations for this decline. Declining age-specific death rates is another determinant of an aging population; although its present effect is not pronounced compared with the fertility rate, it will become the predominant factor when the reduction in total fertility rate has levelled off. Decline in age-specific death rates leads to increase in longevity of the elderly; the expectation of life at age 60 for men and women increased from 16.1 and 18.9 years in 1974-6 to 20.3 and 23 years respectively in 1995-6 (Table 3.2) (NSO, 1976; NSO, 1986; NSO, 1996b). The increase in longevity of life during the period 1975-1985 was mainly due to reduction of the death rate in young people, while decline of the death rate in old people was evident during the period 1985-1995.

**Table 3. 2 Life expectancy at age 60 in 1974-6, 1985-6, and 1995-6, Thailand (in years)**

	1974-6	1985-6	1995-6
Female	18.9	18.6	23.0
Male	16.1	15.5	20.3

Source: NSO: The 1974-6, 1985-6, and 1995-6 Survey of Population Change

Recently, Thailand has benefited from a rapid decline of the fertility rate, as reflected in an initial reduction of the total dependency ratio (Table 3.1). However, a dramatic increase in the total dependency ratio is expected to occur from 2010 onward due to the aging process.

In short, population aging is ongoing at an accelerated rate in Thailand and its effects are expected to be pronounced in the coming decade.

Comparing the 1990 and 2000 Population and Housing Censuses, the total population had increased by 10.8% between the two censuses, from 54.5 to 60.9 million, while the elderly had increased by 40.8% from 4.0 to 5.7 million. Women gained more life expectancy than men, as reflected in an increasing proportion of women in the elderly age groups; the proportion of women was 54% among the elderly and increased to 65% among those aged 85 and above. Longer life among women created some difficulties for them, such as health problems, disabilities, and more widows. The proportion of widowers aged 50 and over was only 9.5% in contrast to 34.1% for widows in 1995 (Chayovan and Knodel, 1996). The majority of older people are aged below 70 (62%) and living in rural areas (70%) with their family; less than 5% of them are living alone. Most of them had only primary education or were uneducated (56% and 37%).

Inconsistency of data from official reports and surveys on infant mortality and life expectancy suggests that accuracy of data is problematic. Birth and death registrations are commonly used to show vital statistics of a country; however, they are usually incomplete and result in inaccuracy of vital statistics reported in official statistics. Information from surveys, i.e. the survey of population change, is likely to be more accurate since the interviewers visit the same household every three months and all events of death, birth, and migration in the households are collected. The issue of accuracy of data will be further discussed in section 3.5.

### **3.2 Health care system for Thai elderly**

The health care system in Thailand is a private-public mix of both financing and service provision. Health care expenditure as a percentage of GDP at constant prices in 1994 was 3.2%, and it increased to 3.9% in 1997. After the economic crisis it decreased to 3.7, 3.4, 3.3, and 3.2% in 1998, 1999, 2000, and 2001 respectively (Tangcharoensathien et al., 2003). Public spending as a percentage of total national health expenditures increased from 45 % in 1994 to 54 % and 56 % in 1997 and 2001, respectively. According to the 1996 Health and Welfare Survey, 67% of outpatient visits and 80% of admissions were in public facilities. Increase in the share of public service provision was observed after the economic

crisis; the public share of outpatient visits and admissions increased to 77% and 85% in 2001 (NSO, 2001). The health care system for older people in Thailand is financed through the same program as for the non-elderly, using the same providers, facilities, and benefit package.

### **3.2.1 Health services delivery system**

The health infrastructure has dramatically improved during the three previous decades. The first three 5-year National Health Plans under the NESDP (1961-1976) put emphasis on expansion of hospitals to all provinces and upgrading some health centres to district hospitals. Expansion of services to reach people in rural areas was emphasized in the 4<sup>th</sup> (1977-1981) and 5<sup>th</sup> (1982-1986) 5-year national plans by setting up a health centre<sup>11</sup> in every tambol (commune or sub-district) and a district hospital in every district. At the end of the 3<sup>rd</sup> plan in 1976, the coverage of health centres was only 51% of tambols and this increased to 82% and 100% at the end of the fourth and fifth plan respectively. Similarly, the coverage of district hospitals was only 39% at the end of the third 5-year national plan and this increased to 51% and 92% of districts in 1982 and 1987 respectively. Currently, there is at least one health centre in a tambol and one district hospital in a district. At the provincial level, some provincial hospitals have been upgraded to a regional hospital which is a centre for referral in particular areas.

The ratio of population to a unit of various types of health personnel, beds, and health centres during 1971–2000 is shown in Table 3.3. Although improvement of the health infrastructure is apparent, various types of health resources are not equally distributed between Bangkok and other regions. The population to doctor ratio in the Northeast was 10.5 times that in Bangkok in 2000 (Wibulpolprasert, 2002). Comparing all types of resources, health centres have the least inequitable distribution; the population to health centre ratio in the Northeast was only 1.35 times that in the Central region in 2000.

---

<sup>11</sup> A health centre is responsible for approximately 3,000-5,000 people.



**Table 3. 3 The ratio of population: unit of health resource in Thailand 1971 - 2000**

	1971	1981	1991	2000
Doctor	9,058	6,781	4,296	3,379
Dentist	69,680	44,465	22,841	14,731
Pharmacist	23,462	17,537	12,693	9,555
Nurse	3,953	2,398	1,352	859
Bed	731	649	586	448
Health centre	8,172	10,010 <sup>1979</sup>	5,585 <sup>1987</sup>	4,337

Source: adapted from Thailand Health Profile 1999-2000 (Wibulpolprasert, 2002)

The public health service delivery system in Thailand is an integrated system; all public hospitals provide services range from primary to secondary or tertiary care. In rural areas, services in health centres are provided by paramedical personnel i.e. nurse, midwife, sanitarian. Services provided by health centres include simple acute curative care, health prevention and promotion services, screening programmes, nutrition and communicable diseases surveillance, and public health programmes. Some health centres also provide care, under supervision of doctors from hospitals, for patients with chronic conditions (e.g. diabetes and hypertension) whose conditions are uncomplicated and well-controlled. At district level, there is a district hospital which ranges from 10-120 beds. District hospitals act as the primary care provider in the tambol where the hospital located, and provide outpatient care and inpatient care. At provincial level, a provincial hospital ranges from 150 to more than 500 beds and services provided include primary to tertiary care. For the private health sector, there are private clinics and hospitals, and the majority of them are accumulated in wealthier urban areas such as Bangkok and the capital district of provinces. Private health services are popular amongst those who can afford the fee and prefer convenient services. Most private clinics are owned and operated by public doctors working in dual practice, and are open outside official working hours.

An explicit policy for the elderly and an implementation plan was in place in the 7<sup>th</sup> 5-year National Health Plan under the NESDP (1992–1996) or ten years after the National Long-term Plan for the Elderly (1982–2001) had been established. A National Committee on the Elderly of Thailand was set up in 1982 following the 1978 World Assembly on Aging. The

committee established and announced the long-term plan in the same year; however, no effective implementation plan was developed by the government during that time (Kamnuansilpa et al., 1999). A significant expansion of government programmes has been developed in the 1990s to provide health and welfare to the elderly; particularly noteworthy is the establishment of free medical care for the elderly and the 300-Baht monthly welfare allowances to indigent elderly. In order to improve the health and well-being of older people, a comprehensive health plan for the elderly was established in 1992 under the 7<sup>th</sup> 5-year National Health Plan which included establishment of free medical care, geriatric clinics in public hospitals, and elderly clubs (for health promoting and preventive activities). The Geriatric Medicine Institution was set up in 1992 within the Department of Medical Sciences, MOPH, to provide training for health professions and health volunteers. However, less than half of hospitals complied with establishing geriatric clinics while most of them did establish elderly clubs (Kamnuansilpa et al., 1999). The main reason for not complying with the clinic was lack of health personnel and appropriately skilled personnel to staff the clinics.

Services provided by health centres specific to the needs of the elderly emphasize health screening and preventive and promotive services. Screening for hypertension, diabetes, and vision impairment are done by health workers and cases detected are referred to district or provincial hospitals according to the referral line. Health education and counselling is provided to those attending the elderly clubs which meet in nearly all health centres and hospitals on a monthly basis. Some social activities are also provided by health workers and members within the group, e.g. cultural events. Providing care at home for chronically ill and disabled elderly is already included in the UC benefit package; however, compliance of providers to this service may be low since it requires more resources and time and the monitoring system to ensure services are actually provided is still weak. Traditional Thai massage or medicine is provided in a few health centres; even though this is not specific to the elderly, they might be major customers. Hospitals provide the same services to the elderly as do health centres, in addition to more curative care and modern rehabilitative services. For effective case management, most hospitals provide special clinics for diabetes and hypertension, and older people are major users.



Despite the expansion of government assistance, budgetary considerations as well as traditional values continue to direct government policy towards an emphasis on the family as having the primary responsibility for assistance and support for the elderly. This value was evident in the long-term plan for the elderly and the national five year plans. Evidence from studies of living arrangements and support of Thai elderly indicate that a widespread and functioning familial system of support and care for the elderly has been maintained despite the major social, economic and demographic changes that have occurred in Thailand over recent decades (Knodel et al., 1992; Knodel and Chayovan, 1997b; Knodel et al., 1999; NSO, 2002). Even though co-residence with a child appears to have declined modestly, the majority of elderly still co-reside with their children. Living alone is thus uncommon among Thai elderly; only 5% of the elderly lived alone in 2002 (NSO, 2002). The relative stability in aspects of the family support system does not mean that the current family system of support will remain unmodified in the foreseeable future. Many forces have been cited to affect intergeneration relations and support, such as smaller family sizes, urbanization, migration, increased economic activity outside the home by women, and change in values. However, the values that underlie familial support appear to be deeply ingrained in Thai culture and thus may be resistant to radical alteration or rapid change (Knodel et al., 1999).

### **3.2.2 Health insurance for the elderly**

A policy of charging for drugs and medical services in public facilities has been in place in Thailand since 1945. In parallel with this policy, an informal exemption mechanism at the discretion of the health worker for those who could not afford the fees was also implemented to protect them from inaccessibility to care and financial catastrophe. A formal exemption policy for the elderly started in 1951, but was limited to government retirees. Informal exemption gradually evolved into a systematic means-testing scheme based on income in 1975 and the government allocated a specific budget to support public health facilities.

It was in 1992 that the policy of free care for the elderly aged 60 and above was announced in the Ministry of Public Health's Regulations and the government set a budget line

incorporated into the Low Income Scheme<sup>12</sup>. Nonetheless, the Ministry of Public Health (MOPH) did not provide an explicit operational definition of eligible elderly for policy implementation; therefore, differences in practice existed across provinces and hospitals. Some hospitals provided free care to all people aged 60 and over while some hospitals provided free care only to those who were poor (Srithamrongsawat, 2000). This was due to the limited government budget and a substantial role of non-government budget revenue in financing public hospitals, 25–33% varying by size of hospital (Srithamrongsawat et al., 2000). The policy was more explicitly stated when a new financial management regulation of the Medical Welfare Scheme (MWS) was enacted in 1998. The 1998 regulation aimed to improve good governance of the scheme and equity of budget<sup>13</sup> allocation by getting more involvement of local authorities and non-government organizations in the national and provincial management boards, and setting an explicit criterion for budget allocation – per capita of eligible persons under the scheme<sup>14</sup>. Due to unavailability of electronic registration database, the budget was allocated to provinces according to reported and estimated number of beneficiaries. The elderly could access free care at their local hospital or a health centre. Access to provincial hospitals or tertiary hospitals could be done only by referral; otherwise they had to pay out-of-pocket. The benefit package provided to the elderly was the same as that provided to other groups under the MWS.

A system of per capita budget allocation based on an electronic registration database was piloted in 6 provinces<sup>15</sup> under the Social Investment Programme of the World Bank during 1999-2001. This was a World Bank project loan aiming to support the new poor who were unemployed because of the economic crisis. To ease its implementation and monitoring, it was implemented just in the 6 provinces where it replaced the MWS. According to the loan agreement, the budget was directly allocated from the MOPH to implementing hospitals

---

<sup>12</sup> In 1994, the scheme was extended to cover children under 12, disabled persons, veterans, and monks. Since then the scheme was changed in name to the Medical Welfare Scheme (MWS).

<sup>13</sup> The budget of the MWS covered only non-salary operating budget for curative care.

<sup>14</sup> Eligible persons included: the poor, children aged below 12, secondary school students, elderly, disabled, veterans, monks, and community leader and health volunteer's families. The per capita budget was differentiated for each group according to average utilization rate and costs.

<sup>15</sup> The six provinces were Phayao and Nakorn Sawan in the North, Yasothorn in the Northeast, Pathum Thani and Samut Sakorn in the Central, and Yala in the South.

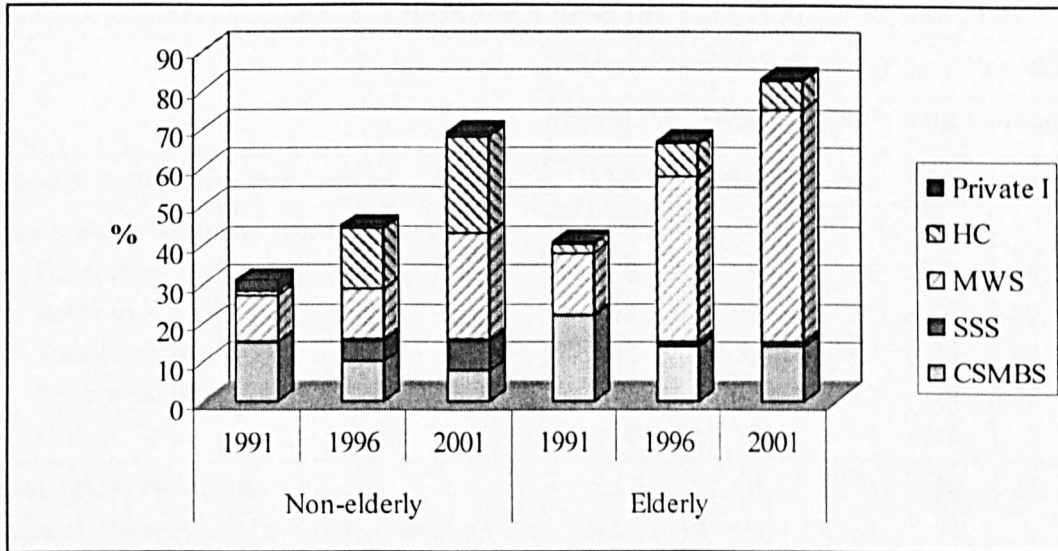
instead of to provinces, and performance based payment methods, capitation for outpatient care and Diagnosis related group (DRG) within a global budget, were piloted in this programme. The programme budget for each province was set according to the number of registered population adjusted by age group, and the budget was divided between outpatient and inpatient care (45 and 55% respectively). The budget was allocated from the MOPH to hospitals quarterly according to the number of registered beneficiaries and the DRG weights of individual hospitals.

The MWS covered the majority of the elderly, followed by the Civil Servant Medical Benefit Scheme (CSMBS) and the Health Card scheme (HC) while the Social Security Scheme (SSS) played a minimal role among the elderly. The CSMBS is a welfare scheme provided as a fringe benefit for government workers, retirees, and their dependents, including up to 2 children under 18 years old and their parents. So elderly who are covered by the CSMBS are not only government retirees but also parents of government workers. The HC was a public subsidized voluntary health insurance scheme aiming to provide insurance coverage to neither rich nor poor families. A health card covered up to 5 members in a family with a price of 500 Baht pre annum<sup>16</sup>. The Social Security Scheme (SSS) is a compulsory health insurance scheme for employees (not including their dependents) in the private formal sector and the government, employers, and employees contribute equally to the social insurance fund.

Health insurance coverage among the elderly increased remarkably during the 1990s, from 44% in 1991 to 66% and 83% in 1996 and 2001 respectively. The increase was mainly due to the expansion of free medical care for the elderly under the MWS, as shown in Figure 3.1. The coverage of the MWS among the elderly increased sharply from 16% in 1991 to 60% in 2001. The coverage of the MWS among the non-elderly also increased during the late 1990s but with a similar rate as the HC. In contrast to the MWS and the HC, there was a decline in the coverage of the CSMBS, especially among the non-elderly; this was due to government policy to restrict the number of civil servants and an early retirement policy.

---

<sup>16</sup> The government subsidized 500 Baht per card during the period 1994 -1998 and increased the subsidy to 1,000 Baht per card in 1999 before the scheme was ended in 2002 after the inception of the UC policy.

**Figure 3. 1 Insurance coverage (%) among Thais in 1991, 1996, and 2001**

Sources: Reanalysis of the 1991, 1996, and 2001 Health and Welfare Survey.

### 3.3 Access to and use of health services among Thai elderly

According to the 1991, 1996, and 2001 Health and Welfare surveys, improvement in health status was apparent among both the elderly and non-elderly during the period 1991–1996 (Table 3.4). There is a decreasing trend of self-reported illness among both elderly and non-elderly between the three surveys (NSO, 1991; NSO, 1996a; NSO, 2001). However, it is worth noting that only one episode of illness was asked about during the 2-week recall period in the 2001 survey, while up to three episodes were asked about in the two previous surveys<sup>17</sup>. In contrast to the illness rate, use of health facilities increased markedly. A remarkable increase in service use in public facilities was observed among both groups in contrast to self-care. The probabilities of use of a health facility of the elderly were slightly higher than the non-elderly; the elderly used more public facilities but less self-care and private facilities compared with the non-elderly.

<sup>17</sup> Twenty seven and fifteen percent of illness episodes reported in the 1991 and 1996 surveys respectively were the second or third episodes.

**Table 3. 4 Illness and service utilization among the Thai 1991, 1996, and 2001**

	Elderly (aged 60 and above)			Non-elderly		
	1991	1996	2001 <sup>1</sup>	1991	1996	2001 <sup>1</sup>
Average acute illness /person/year	13.8	10.2	9.2	6.1	3.8	3.4
Care seeking behaviour when getting ill (%)						
Do nothing	8	5	6	7	3	5
Self-care <sup>2</sup>	32	22	21	40	29	26
Public facilities	37	53	60	29	42	51
Private facilities	15	15	12	19	22	17
Others	8	5	1	4	3	1
Total health facility use	52	68	72	48	65	68

Sources: Reanalysis of the 1991, 1996, and 2001 Health and Welfare Survey

Note: 1. only one episode of illness was asked about in 2001

2. Self-care includes herbs, traditional medicine, and self-prescribed drugs

Differences in the distribution of acute illness among the elderly are observed across age groups, residential areas, sexes, educational levels, income groups, and types of insurance cover (Table 3.5). The acute illness rate was lowest among elderly residing in Bangkok, and highest among those residing in villages. Women, married respondents, and those aged 70 and above were more likely to report acute illness than men, unmarried respondents, and the young old. Elderly who had none or less than primary education, and those with a per capita monthly household income below 500 Baht, also had the highest illness rates. Moreover, elderly who were covered by the MWS reported the highest illness rate. Age might be the major confounder among these differences as there were greater proportions of elderly aged 70 and above amongst those who were female, unmarried, had less than primary education, were covered by the MWS, and those with a per capita monthly household income below 1000 Baht, as shown in Table A2.1 in Appendix 2. Nevertheless, the difference in illness rate by nearly all variables remained after controlling for age, as shown in Figure A2.1 – A 2.6 in Appendix 2.

**Table 3. 5 Illness rate (episodes/person/year) by socio-demographic characteristics among the elderly aged 60 and above in 1991, 1996, and 2001**

	1991	1996	2001
Age group			
60 – 69	13.0	10.0	8.3
70 and over	14.9	11.0	10.5
Area of residence			
Bangkok	9.2	6.3	6.7
Municipality area	12.5	9.5	} 8.9*
Sanitary district	13.8	10.2	
Village	15.6	10.9	9.7
Sex			
Male	12.1	8.8	8.1
Female	15.0	11.5	10.2
Marital status			
Married	12.9	9.5	8.5
Unmarried**	14.9	9.9	10.3
Educational level			
None or <primary	14.8	11.6	10.5
Primary	13.6	9.8	8.9
Secondary	9.2	7.4	7.1
Insurance coverage			
Uninsured	13.0	8.6	7.2
CSMBS	12.1	11.3	8.7
MWS	17.1	12.5	10.3
HC	13.8	8.0	7.0
Per capita monthly household Income			
<500			10.0
500 – 1000	N/A	N/A	8.6
1000-2000			8.8
2000-3000			7.4
>3000			6.5

Source: Reanalysis of the 1996 and 2001 Health and Welfare surveys

\* All sanitary districts were upgraded to municipalities

\*\* Unmarried includes single, separated, divorced, and widowed



Differences in access to and use of health services are also observed by area of residence, educational status, insurance coverage, and income (Table 3.6). Elderly who were residing in Bangkok, covered by the CSMBS, had secondary education and above, and had monthly income above 3,000 Baht, were more likely to use health facilities when ill than the others. However, those who resided in Bangkok were more likely to have higher educational status, higher income level, or be covered by the CSMBS (see Table A2.2 in Appendix 2), so these factors might be correlated. It is worth noting that the MWS reached the worst off very well; elderly who were living in rural areas and the poor had the highest insurance coverage, mainly covered by the MWS (Table A2.2 and Figure A2.7). The CSMBS was prominent among those residing in Bangkok or municipal areas, the richer groups, and those having secondary education (Table A2.2; Figures A2.7 and A2.8). Elderly who were living in Bangkok had the highest utilization rate when insurance coverage and income were controlled, with the exception of the poorest group in Bangkok (Figures A2.9 and A2.10). Elderly who were covered by the CSMBS also had the highest utilization rate when area of residence and income were controlled (Figures A2.9 and A2.11).

It is worth noting that a gradient of service utilization across income groups was observed among the uninsured and CSMBS beneficiaries, but not for those covered by the MWS and the HC. This was likely due to the effect of out-of-pocket payment on the uninsured and retrospective reimbursement of the CSMBS on its beneficiaries. Even though elderly residing in Bangkok had the highest probability of use of health facilities when ill, disparity in the use of health care across income groups was observed among them while it was not observed among those residing in municipalities and villages (Figure A2.10). The poor in Bangkok had the lowest probability of using health facilities once ill. However, the limited differences in use between municipalities and villages might be underestimated as the Health and Welfare survey included only acute illness despite the fact that chronic conditions are prominent among the elderly. Moreover, services for some chronic conditions such as diabetes or hypertension are usually not available in rural health centres.

**Table 3. 6 Use of health services among the elderly aged 60 and above, 2001**

	% insured	% use health facility when ill		
		Public	Private	Total
Area of residence*				
Bangkok	39	52	31	83
Municipality	79	57	16	73
Village	90	61	9	71
Age				
< 70	81	60	13	72
70 +	86	90	12	72
Sex				
Male	83	60	12	72
Female	83	60	12	72
Marital status				
Married	84	61	12	73
Unmarried	81	58	13	71
Education*				
< primary	83	60	11	71
Primary	84	60	12	72
> primary	74	57	24	81
Insurance*	% pop			
CSMBS	14	68	15	83
MWS	60	62	9	71
HC	7	59	9	69
None	17	41	29	70
Per capita monthly household Income*				
<500	92	62	6	69
500 – 1000	87	62	11	73
1000-2000	79	58	15	72
2000-3000	69	52	18	70
>3000	63	49	33	81

Source: Reanalysis of the 2001 Health and Welfare survey



### **3.4 Universal Health Care Coverage Scheme**

Providing universal health care coverage had been discussed and emphasised among a few academicians and leading policy makers since the beginning of 2000; however, a consensus on this issue could not be achieved. Nevertheless, the MOPH supported this issue by putting it as a goal in the 5-year National Health Plan under the 8<sup>th</sup> National Economic and Social Development Plan (1997-2001), and a near universal coverage policy was set within the MOPH. The Health Card project was used as a policy tool to achieve the policy objective (Srithamrongsawat, 2002) and this resulted in rapid expansion of the coverage of the HC, particularly among the non-elderly as shown in Figure 3.1. The policy later achieved greater acceptance by academicians and policy makers within and outside the MOPH. In 2000, the Health System Research Institute set up a working group to propose a model for achieving universal coverage in Thailand (The Committee of Universal Coverage Policy Development, 2001).

This policy was adopted by the Thai Rak Thai party as a policy agenda for the 2001 election. The party gained extra votes and won the election, so the universal coverage with a 30 Baht co-payment scheme (UC) was announced by the Royal Government in Thailand at the beginning of 2001 and has been fully implemented countrywide since April 2002. The policy aims to cover all Thais who were not covered by public health insurance schemes with a minimal co-payment of 30 Baht for outpatient visits only. The scheme is a tax-based health insurance scheme. It covers people who were previously uninsured and incorporates those previously covered by the MWS and the HC. Those eligible for the MWS were incorporated into the UC scheme but without co-payment, while the co-payment is required for those who previously held a health card. The policy was piloted in the 6 provinces under the Social Investment Project (SIP) in April 2001 and was expanded to 15 and 30 other provinces in June and October, respectively, in the same year, and the rest of the country in April 2002.

The UC scheme provides a comprehensive benefit package<sup>18</sup> covering curative, preventive and promotive, and rehabilitative services. A few conditions are excluded from the benefit package (National Health Security Office, 2004)<sup>19</sup>. In order to make it possible to implement rapidly and sustainably, some health care reform initiatives are also incorporated as its policy components, such as budget allocation, purchasing health care and strengthening primary care.

In order to contain health care cost, a close end payment system has been adopted by the UC scheme(MOPH, 2001). The 2001-2 per capita recurrent budget was calculated based on the assumption that 100% of services used in health facilities were covered by the UC scheme, by employing the 1996 service utilization profiles and unit cost of service at each level (Tangcharoensathien et al., 2001)<sup>20</sup>. The budget for all personal care (including salary) was set and allocated to provinces on a per capita basis, without risk or age adjustment. A reinsurance policy for high cost care and emergency care<sup>21</sup> was established at national level in order to get better risk pooling between provinces and hospitals and to ensure accessibility to emergency care outside registered hospitals, and to high cost care services for its beneficiaries. In addition, a contingency fund of 5,000 million Baht was set to support hospitals experiencing financial constraints according to the new allocation method. Budgets for capital investment, administration, and other public health programmes were set and allocated separately.

---

<sup>18</sup> The benefit package includes physical exam, medical procedures, essential drugs, laboratory tests and investigations, medical appliances, physiotherapy, dental services, clinical preventive and promotive services, alternative medicines, bed and meals in public ward, and ambulance service.

<sup>19</sup> Services excluding from the benefit package are cosmetic surgery, infertility treatment, in-vitro fertilization, sex change, treatments or investigation without proper medical indication, anti HIV immunity drugs, hospital stay exceeding 180 days, chronic renal failure, treatment under experiment, organ transplantation, and services covered by other programmes or insurance scheme i.e. psychiatric inpatient care exceeding 15 days, drug addict therapy, and traffic accident injuries.

<sup>20</sup> The annual per capita budgets for ambulatory care, inpatient care, and preventive and promotive care in 2001-2, were 574, 303, and 175 Baht respectively.

<sup>21</sup> In 2002, the MOPH deducted 25 and 32 Baht from the per capita budget before allocating the budget to provinces, to keep for emergency care and high cost care respectively. Hospitals that provided emergency services to patients who were not registered with them could be directly reimbursed from the MOPH. In addition, hospitals that provided care for inpatient cases with DRG weight of over 3, and specific services in the high cost care list, could be directly reimbursed from the MOPH according to the standard fee.

For the bulk of the capitation amount, two alternative payment methods were set by the MOPH: inclusive capitation, flat rate capitation for all personal care<sup>22</sup>; and exclusive capitation, flat rate capitation payment for ambulatory care and Diagnosis Related Group (DRG) weighted global budget for inpatient care<sup>23</sup>. Each province could also choose whether to include salary in the payment adopted<sup>24</sup>. For payment within the contracting unit for primary care (CUP) between hospital and health centres, it was left to the province to decide.

Due to the lack of an effective primary care unit in the transition phase, hospitals were chosen as a contracting unit for primary care (CUP). All MOPH hospital are assigned as CUPs and accredited private hospitals can enrol to provide care under the scheme. The scheme intends to promote competition between providers and provide choice for beneficiaries; however, to make it simple in the implementation, all beneficiaries were allocated to their local hospital in the first year<sup>25</sup>. To strengthen primary care and improve physical access, all main contractors are required to set up a Primary Care Unit (PCU)<sup>26</sup> for every 10,000 registered beneficiaries.

The main differences between the UC scheme and the MWS are summarized in Table 3.7 below. These include the concept of the schemes, institutional arrangements, system support, and benefit package. The MWS was a welfare-oriented scheme while the UC scheme puts emphasis on entitlement. As there was no explicit policy guideline for the MWS, elderly cardholders were more likely to be those who were poor and living in rural areas, as shown in the previous section. Moreover, the main concept of the MWS was to insure illness, ensuring access to care for the sick, while the UC scheme aims to insure good health by covering both curative and preventive and promotive care.

---

<sup>22</sup> A simple capitation was employed without risk or age adjustment

<sup>23</sup> Severity of cases and resources used is allowed for in the DRG system; however, the weights of some DRG groups have been criticized as inconsistent with what they should be.

<sup>24</sup> In fiscal year 2003, the MOPH required all provinces to employ capitation payment for ambulatory care and DRG weighted global budget for inpatient care.

<sup>25</sup> Choice of provider has been provided for beneficiaries in some pilot provinces in 2003.

<sup>26</sup> The primary care unit has to meet the minimum standard set by the MOPH in terms of inputs, structure, and service provision.

**Table 3. 7 Main differences between the UC scheme and the MWS**

Issues	MWS	UC
Concept	Welfare oriented and insure illness	Entitlement and insure health
Source of finance	Government non-salary operating budget for curative care	Government operating budget for all personal care
Budget allocation	Per capita	Per capita
Payment methods	Varied from province to province	1. Capitation payment (2002 only) 2. Capitation for ambulatory care and DRG weighted global budget for inpatient care
Service provision	Only MOPH facilities with strict referral system	All public facilities and qualified enrolled private facilities All contracted hospitals set up primary care units
Choice of provider	None	None in the first year but choice piloted in some provinces in 2003 (beneficiaries can choose one provider within or nearby their district)
System support	Regulate budget used	Need capabilities for active purchasing and performance based regulation
Benefit package	Only curative services	Both curative and preventive and promotive services

Another main difference is the budget system. The UC budgets include both salary and non-salary operating budget for all personal care while the MWS scheme covered only non-salary budget for curative care. Budget allocation of both schemes is similar - per capita allocation; however, salary was included in the per capita budget of the UC scheme while it was not for the MWS. Age adjustment was employed by the MWS in its allocation while it is not by the UC. The UC scheme will have a greater effect on providers since it includes all operating budgets. Under the MWS, each province set their own payment methods while only two payment methods were allowed for the UC scheme.

Another crucial difference is the emphasis on primary care of the UC scheme. The primary care level is chosen as the contracting unit level; however, since there is no effective primary care at present, all hospitals were chosen as main contractors. According to the requirement of the UC scheme, some health centres have been upgraded to a PCU with

staff from the hospitals rotating to provide care. Access to a private contractor is also allowed while only MOPH hospitals were allowed under the MWS. However, greater management and regulation capacities of the provincial health office are required for the UC scheme in order to monitor provider performance, while the MWS controlled only budget used. For the benefit package, it is the same as the MWS plus preventive and promotive services.

Considering the coverage of health insurance before the introduction of the UC scheme, providing universal coverage for all may have more significant effects on access to care and financial protection for the non-elderly than the elderly since the previous insurance coverage among the former was much lower than the latter. Providing insurance coverage will enable access to care and reduce financial burden caused by health care for those previously uninsured. Providing universal coverage of health insurance will, theoretically, increase demand for care and could result in longer queues in public facilities; whether this will crowd out the elderly from the services is another concern. Reforming financial arrangements of the system will affect access to and quality of care of both elderly and non-elderly groups; however, this depends on what are the financial implications for provinces and hospitals. Provinces with a relatively greater number of health personnel in relation to population lost budget according to the per capita allocation; this probably resulted in negative consequences on access and quality of care for both elderly and non-elderly groups. The unadjusted capitation for outpatient care might provide less incentive for providers to provide expensive care i.e. care for chronic conditions and geriatric care, so it might affect the old more than the young. The DRG system already takes severity of cases and resources used into account in its groupings; however, if the level of payment does not adequately reimburse hospitals for the costs, some negative implications may occur, but for both groups<sup>27</sup>. Strengthening primary care by putting more resources in health centres and upgrading some of them to be PCUs will make more services available near people's homes and benefit those in rural areas, particularly the poor and those with limited mobility, such as older people and disabled persons. Older people are more likely to be

---

<sup>27</sup> Hospitals can be directly reimbursed for inpatient cases with DRG weight of 3 or over and for some conditions in a high cost list according to the standard payment set by the MOPH.

poor and have limited mobility so this may provide more benefit to the elderly than the non-elderly.

### 3.5 Accuracy of data

Inconsistency of official data from various sources and surveys suggests that accuracy of data is problematic in Thailand, particularly for official reports. Vital registration, i.e. birth and death registration, is commonly used and essential for calculating vital statistics. However, incomplete and under reporting of births and deaths was common in Thailand in the past when there was poor infrastructure. New born deaths were likely not reported amongst those giving birth at home. However, improvement in the completeness of current birth registration is expected as nearly all deliveries are in health facilities. Completeness of birth registration might be better than for death registration since people might have more incentive to do the former than the latter. A birth certificate is essential to obtain social benefits provided by the government while there is no such incentive for registering deaths. Completeness of official data is likely to be determined by the incentives provided. For the UC scheme, providers will have great incentive to register beneficiaries when they get a per capita budget from doing so, and over reporting may be a risk. Reporting of service use is likely to be more complete when it is directly related with the payment made i.e. inpatient data for DRG payment.

Reliability of official data is another concern and may be more problematic than incompleteness. Only deaths in hospitals and abnormal deaths requiring investigation are reported by health professions. The cause of illness or death reported by health professions can be unreliable; for example, doctors might not report the real cause of illness or death in order to avoid stigma for the patients and their families. Date of birth in the birth certificate of older people may also be problematic. As most older people were delivered at home and infrastructure was poor in the past, delayed birth registration might be common amongst them. In order to avoid being fined for delayed reporting of birth, their parents might report a new date within 15 days of the date they report the birth.

Data from surveys may be more complete and accurate; however, this depends on the appropriateness of the methodology employed. Inconsistencies in questionnaire design and

sampling between subsequent surveys is common and make it difficult to compare results, e.g. service utilization rates from the H&W surveys, between years.

Considering inaccuracy of official data, triangulation or cross-checking data from different sources is essential. Moreover, all these limitations and potential problems should be kept in mind in the analysis and interpretation of information.

### **3.6 Summary**

Improvement of health status of the elderly as reflected by reduction in illness and mortality rates and an increase in longevity of life was apparent during the 1990s. Improvement of socioeconomic conditions, availability of health services, and public health interventions explain the improvement. However, differences in the distribution of acute illness existed across age groups, areas of residence, sexes, educational levels, income groups, and health insurance schemes.

A significant expansion of government programmes for the elderly was apparent during the 1990s, particularly free medical care and welfare allowances for indigent elderly. In parallel with these programmes, the roles of family in providing care and support was also emphasized, whether in the long-term plan for the elderly or the national five year plans. Despite many forces that may cause some erosion in familial support, only a modest decline of co-residing with a child was observed among the elderly during the two previous decades. Children still play a crucial role in taking care of their parents and providing financial support; however, this does not mean that the current family system of support will remain without modification in the future.

Improvements in access and use of health facilities were apparent among the elderly and non-elderly during the previous decade. Insurance coverage increased substantially during the same period and best explained the majority of improvements. Other explanatory factors include improvement of physical access, socioeconomic conditions, modernization, and attitude towards health care. However, differences in health service utilization among the elderly by various factors persisted, such as by insurance scheme, residential area, education level, and income group. Service utilization among elderly residing in Bangkok was, on average, the highest, with the exception of the poorest group; greater physical

access and better socioeconomic conditions best explained the high utilization rate among the majority of them. A significant gradient of service utilization across income groups was observed among the uninsured and CSMBS beneficiaries; this could be explained by the effect of price barriers according to out-of-pocket payment and the retrospective payment of the CSMBS. The limited differences in service use by residential area and income group might be explained partly by the higher coverage of insurance among the rural elderly and the poor. However, only limited conclusions can be drawn since only acute illness was considered in the previous surveys in spite of the fact that chronic conditions form the majority of illness among the elderly and services for some particular conditions are less available in rural areas.

Providing universal coverage of health insurance is likely to provide greater benefit to the rich and those residing in Bangkok and urban areas, who already had greater access to health care, than to the poor and those residing in rural areas. This is because a greater proportion of the former were uninsured prior to the UC policy. This raises questions on how equitably the UC scheme provides protection for the elderly in terms of access and out-of-pocket payment. Whether the payment system disadvantages the elderly is another concern, particularly for ambulatory care since the capitation payment was not adjusted for age. Employing the utilization rates in 1996 for the calculation of per capita budget without adjustments for changes in the pattern of services used might also result in under finance to the scheme and had negative implications on access to care for the elderly. Moreover, as the scheme changed the financial management system from top down budget allocation to purchasing care, this raises the question of how effectively has the UC scheme been implemented and managed, and what are its implications for the elderly?



## **CHAPTER 4: OBJECTIVES AND METHODOLOGY**

This chapter aims to provide an overview of the research methods employed in the study in addition to their justification. As the following results chapters (chapter 5 through 8) are presented as complete papers, to avoid duplication the details of measurements will be provided in the result chapters. Aims and objectives of the study are presented in the first section together with development of methodology and definition of terms. The second section briefly describes the study setting - Yasothon province. Details of the methods used in the study are provided in the third section, followed by limitations of the study at the end.

### **4.1 Aim and objectives**

#### **4.1.1 Aim**

The study aims to contribute to understanding how well the Universal Coverage scheme has been implemented in Thailand and has performed its two basic functions, enabling access to care and protecting the elderly from catastrophic payment, in order to inform policy makers and health administrators on how to improve the policy, its implementation, and the service delivery system for the elderly.

#### **4.1.2 Objectives**

1. To assess how effectively the UC has been implemented for the elderly in a selected province, problems and constraints, and providers' responses to the policy, and implications in terms of service provision for the elderly.
2. To assess service utilization and take-up of UC benefit among elderly persons residing in urban and rural areas, and factors explaining the use of services and take-up of benefit including whether the UC scheme provided equitable use of services for the elderly.
3. To measure equity of out-of-pocket payment among elderly beneficiaries of the UC scheme.

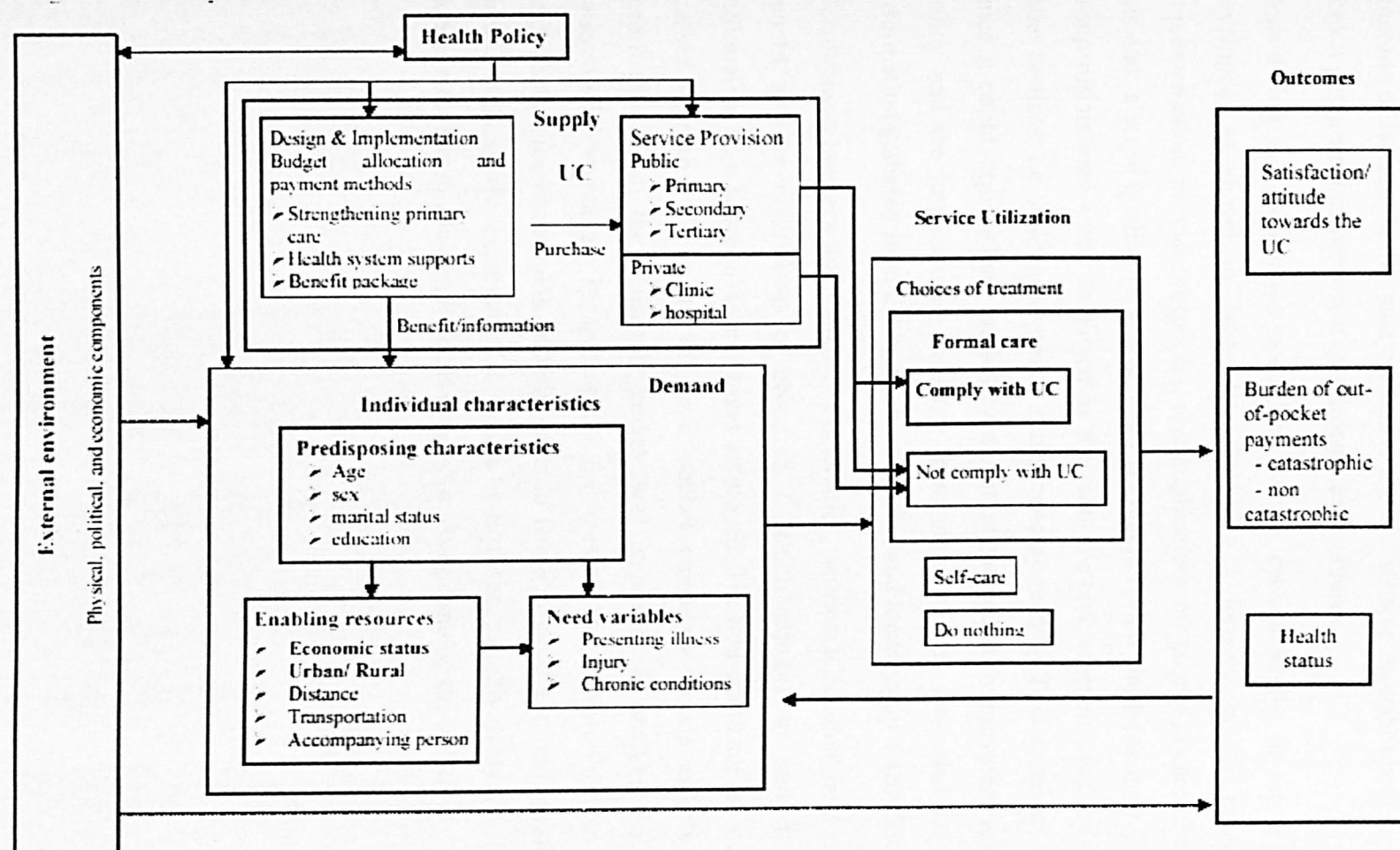
4. To assess how well the UC scheme protects the elderly from catastrophic payments and their implications for households and the elderly in terms of burden of costs and coping mechanisms.

#### **4.1.3 Development of methodology**

Based on the literature review and objectives of the study, a conceptual framework of the study was developed, as shown in Figure 4.1. The framework was developed by integrating the Andersen Behaviour model, the Organizational Constraints model, and the descriptive framework for policy analysis of the insurance function as described in Chapter 2. The Andersen Behaviour model puts emphasis on individual characteristics that influence service utilization: predisposing characteristics, enabling resources, and need variables. The Organizational Constraints model puts emphasis on incentive structures within different health care settings, e.g. level of market competition, payment methods, consumer choice etc. Since health service utilization is the interaction between demand and supply, both models were integrated. The descriptive framework for policy analysis of the insurance function was chosen to describe institutional arrangements of the scheme in order to understand its impacts on service utilization and immediate outcomes.

The main focus of the study is the insurance functions of the UC scheme; how effectively the scheme has enabled access to care for the elderly and protected them from catastrophic payments. Certainly, demand for health care can be patient initiated and physician initiated; the decision to seek care once ill is usually generated by individuals, while types and intensity of services received are usually influenced by physicians. The box on the upper left of Figure 4.1 represents supply of health care, which includes institutional arrangements of the UC scheme, benefit package, and health system support. How the scheme was designed and works will directly affect the behaviour of providers in their service provision. Individual characteristics - predisposing, enabling, and need variables - will determine an individual's decision on whether to obtain care, choice of care, and whether to comply with the scheme. How equitably elderly beneficiaries accessed and used care is the main focus in this stage. The box on the right of the figure represents immediate outcomes of service utilization and take-up of UC benefit in getting care, which includes burden of out-of-pocket payments, satisfaction with the scheme, and improvement in

Figure 4. 1 Conceptual framework



health. However, the financial burden across different economic groups is the only main outcome of interest in this study; whether the UC scheme brought about equitable out-of-pocket payments and prevented catastrophic expenditures.

Considering the information needed to answer each objective, a set of methods was developed, as shown in Table 4.1. Objective 1 focuses on the process of policy implementation, provider responses, and implications for access to care of the elderly. To this end, a set of qualitative approaches - document review, in-depth interviews, and focus group discussions - was employed as the main method, supplemented by evidence from other sources, i.e. household survey and secondary reports. This approach was employed since it could explain how the policy was implemented, how providers responded to the policy and the implications. Evidence from other sources was used to triangulate the information gathered from the in-depth interviews and focus group discussions.

Correlations between individual characteristics, service utilization, and take-up of UC benefit are the main focus of objective 2, which requires an analysis of individual information so a household survey was employed. The household survey was also used to answer objective 3, equity of out-of-pocket payments among elderly beneficiaries. Information from the household survey was employed to analyze the magnitude of catastrophic payments. To understand the reasons for catastrophic payment and the implications for households or individuals in terms of costs and coping mechanisms, the details of those who experienced it need to be explored, so individuals were selected for in-depth interview in addition to focus group discussions among the elderly.

**Table 4. 1 Information needed and methods employed to answer the objectives**

Objectives	Indicators and Information needed	Methods
1. Effectiveness of the policy implementation, problems, provider's responses and their implications	<ul style="list-style-type: none"> <li>▪ The coverage of the UC scheme</li> <li>▪ Attitude of streak holders towards the policy components</li> <li>▪ How the policy was implemented, problems and constraints of policy implementation</li> <li>▪ What were the effects of policy components on providers and how did they respond to them?</li> <li>▪ What were the implications for the elderly in terms of access and financial protection?</li> </ul>	<ul style="list-style-type: none"> <li>▪ In-depth interview</li> <li>▪ Focus group discussion</li> <li>▪ Household survey</li> <li>▪ Document review</li> </ul> <p>Figure 8.1</p>
2. Service utilization and take-up rates, and factors explaining the use of service and take-up of UC benefit	<ul style="list-style-type: none"> <li>▪ Morbidity rate by demographic and socioeconomic variables</li> <li>▪ Service utilization by demographic and socioeconomic variables</li> <li>▪ Take-up of UC benefit when getting care by demographic and socioeconomic variables</li> <li>▪ Factors explaining service use and take-up of UC benefit</li> </ul>	<ul style="list-style-type: none"> <li>▪ Household survey</li> </ul>
3. Equity out-of-pocket payment among UC cardholders	<ul style="list-style-type: none"> <li>▪ Burden of out-of-pocket payments in relation to individual per capita annual income by income quintile</li> </ul>	<ul style="list-style-type: none"> <li>▪ Household survey</li> </ul>
4. Effectiveness of the policy in protecting the elderly from catastrophic payments and implications in terms of costs and coping mechanisms	<ul style="list-style-type: none"> <li>▪ Magnitude of catastrophic expenditures</li> <li>▪ Reasons explaining catastrophic payments</li> <li>▪ Strategies adopted to pay for care</li> <li>▪ Implications of catastrophic payments on households; debts, pattern of intra-household transfer, subsequent service use</li> </ul>	<ul style="list-style-type: none"> <li>▪ in-depth interview</li> <li>▪ Focus group discussion</li> <li>▪ Household survey</li> </ul> <p>Figure 8.2</p>

#### 4.1.4 Definition of terms

*UC elderly beneficiaries* refer to Thai elderly aged 60 and above who are eligible for the UC scheme and not covered by other public insurance schemes such as CSMBS or SSS.

*Coverage of the UC scheme* refers to the coverage of UC cardholders among elderly persons who are eligible and can be calculated as follows;

$$\text{Coverage of the UC} = \frac{\text{Number of elderly beneficiaries holding UC card}}{\text{Total number of elderly} - \text{number of elderly covered by the CSMBS and SSS}}$$

*Service utilization* refers to use of formal care or use of services at either public facilities (health centre, district hospital, provincial hospital, and other public hospital) or private facilities (private clinic and private hospital).

*Take-up of UC benefit* refers to use of the UC card in getting care or compliance with the UC requirements for accessing free care.

*Burden of costs* refers to the proportion of out-of-pocket payments caused by either medical care or non-medical expenditures made to obtain care to individual per capita annual non-subsistence income.

*Medical expenditure* refers to out-of-pocket payments made by an individual, either formally or informally, on medical care.

*Non-medical expenditure* refers to expenditures of obtaining care such as paying for transportation, private ward and meals during staying in hospital.

*Catastrophic expenditures* refer to payments exceeding a percentage of income that cause household difficulties and require it to reduce its basic expenditure over a period of time in order to cope with health care costs.

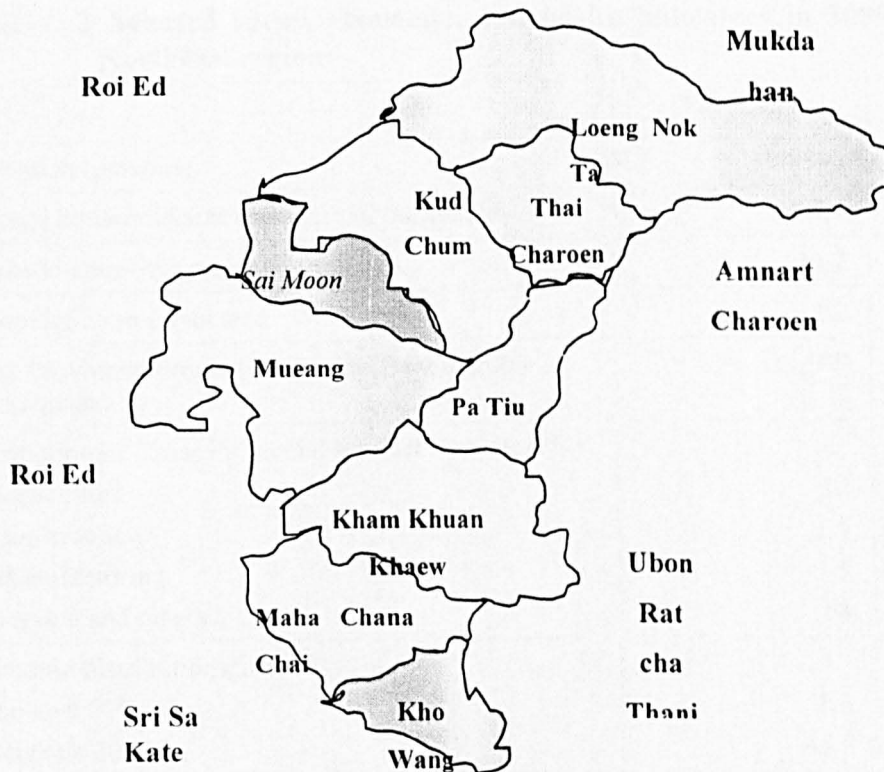
## 4.2 Study setting

Yasothon was purposively selected as a study province for various reasons. Firstly, the province was one among the six pilot provinces where the policy had been implemented for a complete year when the survey started. Secondly, the province had experienced financing reform since 1997 in the Health Care Reform project (HCR) and the Social Investment Project (SIP) of the World Bank, so the system might be ready for policy implementation and the ultimate effects of the UC scheme might be achieved. Finally, the province is one of the poorest provinces in Thailand; average household monthly income was 6,045 Baht in

2002 which was two-thirds of the Northeast average and half of the national average in the same year<sup>28</sup>. Moreover, more than half of the population in the province were under the poverty line in 2001, which was the highest in the country; 53% compared with the national average of 13%<sup>29</sup>.

Yasothon is located in the Northeast of Thailand, 522 kilometres from Bangkok. The province consists of 9 districts; the capital district is Mueang district (Figure 4.1).

**Figure 4. 2 Map of Yasothon province**



<sup>28</sup> From [http://www.nso.go.th/thai/stat/stat\\_23/toc\\_7/7.1-11.xls](http://www.nso.go.th/thai/stat/stat_23/toc_7/7.1-11.xls) accessed on 23/10/2003

<sup>29</sup> From [http://poverty.nesdb.go.th/Pov\\_Incidence/province\\_profile.aspx](http://poverty.nesdb.go.th/Pov_Incidence/province_profile.aspx) accessed on 08/05/2003



The average household size and population density are shown in Table 4.2 and are slightly higher than the national averages as shown in the previous chapter. The province has a lower level of development as shown by the lower degree of urbanization of the province, only 12% of the population resides in urban areas compared to 31% nationally in 2000. Inequitable income distribution is also apparent; nearly half of all income was obtained by the richest quintile in 1998. Although the majority of the population is engaged in the agriculture sector, the proportion of gross provincial product from the agriculture sector accounted for only one fifth of the total in 2000. The demographic figures of the province are similar to those of the country.

**Table 4. 2 Selected social, economic, and health indicators in 2000, Yasothon and Northeast region**

	Yasothon	Northeast region
Population (persons)	580,530	20,825,262
Average household size (persons per household)	4.1	4.1
Population density (persons per sq. km.)	134.2	123.33
% Population in urban area	12.2	16.8
Gross Provincial Product per capita (Baht in 2000 current price)	21,109	40,582
Distribution of Gross Provincial Product by sector (%)		
Agriculture	22	11
Construction	5	6
Manufacturing	5	28
Service and others	68	55
% Income distribution (in 1998)		
Lowest 20%	8.2	Na
Highest 20%	45.5	Na
% Population aged under 5	7.4	7.1
% Population aged 60 and over	8.96	8.8
Crude birth rate in 2001 (per 1,000 population)	10.71	11.1
Crude death rate in 2001(per 1000 population)	5.82	5.1

Source: 1. <http://nso.go.th/provweb/cwdweb/yasothon/stat.htm> accessed on 23/10/03

2. <http://203.157.19.191/birth%20death%2044.xls> accessed on 24/10/03

3. [http://www.nso.go.th/thai/stat/stat\\_23/toc\\_1/1.1.1-4.xls](http://www.nso.go.th/thai/stat/stat_23/toc_1/1.1.1-4.xls) accessed on 28/02/04

4. <http://www.nesdb.go.th/econSocial/macro/NAD.htm> accessed on 28/02/04



The ratios of population per unit of health resources in Yasothon, the Northeast, and the country are shown in Table 4.3. Yasothon, like most northeast provinces, had relatively fewer health personnel in relation to its population compared with other regions; ratios of population to a physician, dentist, pharmacist, and professional nurse were 2-3 times the national average in 2000. The health centre level is the exception; the ratio of population to health centres of Yasothon is slightly better than that of the country and the Northeast.

**Table 4. 3 Ratios of population per unit of health resource in 2000**

	Yasothon	Northeast	Country
Physician	10,872	8,311	3,379
Dentist	34,655	35,476	14,731
Pharmacist	18,482	21,714	9,555
Professional nurse	1,571	1,702	859
Hospital bed	791	766	448
Health centre	4,274	4,930	4,337

Source: MOPH (2001), the 2000 Health resources survey

The relatively low number of health workers in relation to population of Yasothon and other provinces in the northeast resulted in them gaining a greater recurrent budget compared with the past according to the per capita recurrent budget allocation adopted by the UC scheme in the first year. Yasothon gained over 100 million Baht in 2002 or 37% more compared with what the province got in 2001.

### 4.3 Methodology

Both quantitative and qualitative approaches were employed in this study. The quantitative approach aimed to answer what the impact of the UC policy was on access to care and financial protection for the elderly and its magnitude, while the qualitative approach aimed to provide an explanation of the situation. Research methods employed in the study relating to the objectives and the results chapters are summarized in Table 4.4.

**Table 4. 4 Research methods employed in the study**

Objectives	Document review	Household survey	In-depth interview/ Focus group discussion	Case studies of catastrophic expenditure
1. Policy implementation, provider's responses, and its implications ( <b>Chapter 5</b> )	*	*	√	
2. Service use and take-up of UC benefit, and factors explaining the use and benefit take-up ( <b>Chapter 6</b> )		√		
3. Equity of out-of-pocket payment among elderly beneficiaries ( <b>Chapter 7</b> )		√		
5. Catastrophic payments and implications in terms of costs and coping ( <b>Chapter 8</b> )		*	√	√

Note: √ main method served the objective; \* complementary method

#### 4.3.1 Document review

The objective of the document review was to understand the UC policy, how it differed from the MWS, and its implementation in particular for older people. All related documents in relation to the UC policy and the MWS published in the period of 1998-2001 were retrieved and reviewed, such as policy papers, policy guidelines. Information was gathered on policy components, system design such as institutional arrangements, health system support, and benefit package. Official documents within Yasothon, i.e. guidelines and reports, were also collected and reviewed. The review provided information and evidence to support mainly objective 1 and the context for the other study objectives.

#### 4.3.2 Cross-sectional household interview survey

The survey aimed to assess the insurance functions of the UC scheme, enabling access to care and financial protection for elderly beneficiaries; whether the UC scheme brought about equitable access to care and financial protection against catastrophic payment, by area of residence and economic status. The survey mainly served objectives 2 and 3, and also provided evidence to support objectives 1 and 4.

### Sample

The population in this study was non-institutionalized Thai elderly aged 60 and older who were eligible for the UC scheme and living in Yasothon.

#### *Exclusion criteria*

1. Elderly who were living in Yasothon for less than 6 months
2. Elderly who were staying in institutions, i.e. hospital, temple, public sheltered accommodation for the elderly, at the time of survey
3. Those who were covered by the CSMBS, State Enterprise, Social Security, and private insurance
4. Those elderly who were demented and for whom proxy respondents could not be found.

### Sample size

The probability of take-up of UC benefit of urban and rural elderly was the main determinant to calculate sample size. Area of residence, urban and rural, was used as a main independent variable to divide the elderly into two groups and compare service use between them. This was chosen due to previous evidence showing that there was a difference in service utilization by area of residence. The sample size was calculated as follows.

$$n = \frac{\{\mu [\pi_1 (1 - \pi_1) + \pi_2 (1 - \pi_2)]^{1/2} + v [2\pi (1 - \pi)]^{1/2}\}^2}{(\pi_1 - \pi_2)^2}$$

$n$  = sample size required

$\mu$  = one size percentage point of the normal distribution corresponding to 100% - the power

$v$  = percentage point of the normal distribution corresponding to the (two-sided) significance level

$\pi_1$  = proportion of service use among urban elderly

$\pi_2$  = proportion of service use among rural elderly

$\pi$  = average proportion of service use in both groups

According to a 2-week recall period, the probability of using outpatient care at public facilities<sup>30</sup> (including health centre, district hospital, and provincial hospital) among the elderly (under the MWS, HC, and uninsured) living in municipality areas and rural areas in 1999<sup>31</sup> was 15.22% and 19.75%<sup>32</sup> respectively. An 80% power ( $\mu = 0.84$ ) of achieving a significant result at the 5% level ( $v = 1.96$ ) was used to calculate the sample size. The sample size required to test the significance of any difference was 456 for each urban and rural group with a total of 912<sup>33</sup>.

### Sampling technique

A two-stage cluster sampling technique was employed using the 2000 Housing and Population Census of the National Statistics Office (NSO) as a sampling frame. The sampling was done in steps by a statistician in the NSO, as shown in Figure 4.3. Firstly, all communities in the nine districts were divided into two groups, urban (municipal areas) and rural (villages outside municipal areas). A village outside municipalities or an area block<sup>34</sup> in municipalities was defined as a cluster. The primary sampling unit was a cluster; 24 clusters were randomly selected from each group proportionate to the number of blocks/villages in each district. Finally, approximately 24 elderly persons were randomly selected from each cluster to meet the sample size required for each area. The final step was done in the field and was limited by the available number of elderly persons in each block or village. Table 4.5 illustrates the number of elderly persons holding the UC card, clusters, and respondents in each area and district, and the location of clusters is shown in Figure 4.4.

---

<sup>30</sup> This was based on the assumption that all services used in public facilities were covered by the UC (benefit take-up rate).

<sup>31</sup> The 1999 Social Survey information was employed since it was the most updated available information when the study started in 2001.

<sup>32</sup> This was calculated by using the average probability of acute illness of the elderly under the MWS, HC, and for the uninsured, multiplied by the average probability of service use in public facilities when ill of the elderly under the MWS and HC (based on the assumption that the service utilization rate of the uninsured would increase to the level of the MWS/HC).

<sup>33</sup> Sample size was calculated based on the 1999 utilization probability multiplied by 2 (increased recall period from 2 weeks to one month).

<sup>34</sup> This is an area block employed in political elections. There are, on average, 100 households in a block but the number of households in villages varies from village to village.

Figure 4. 3 Steps of sampling process

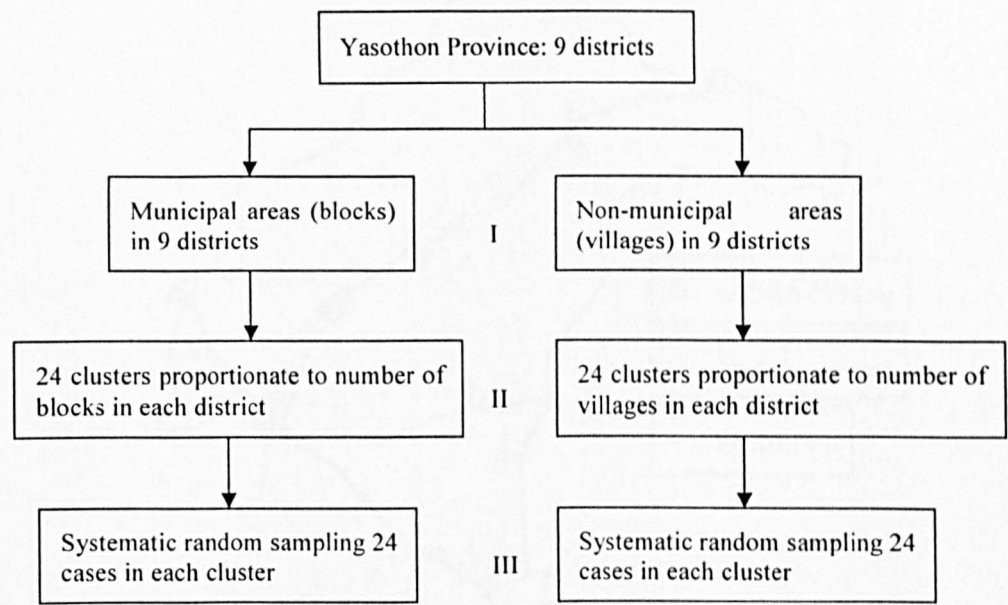


Table 4. 5 Number of clusters and sample selected from each area and district

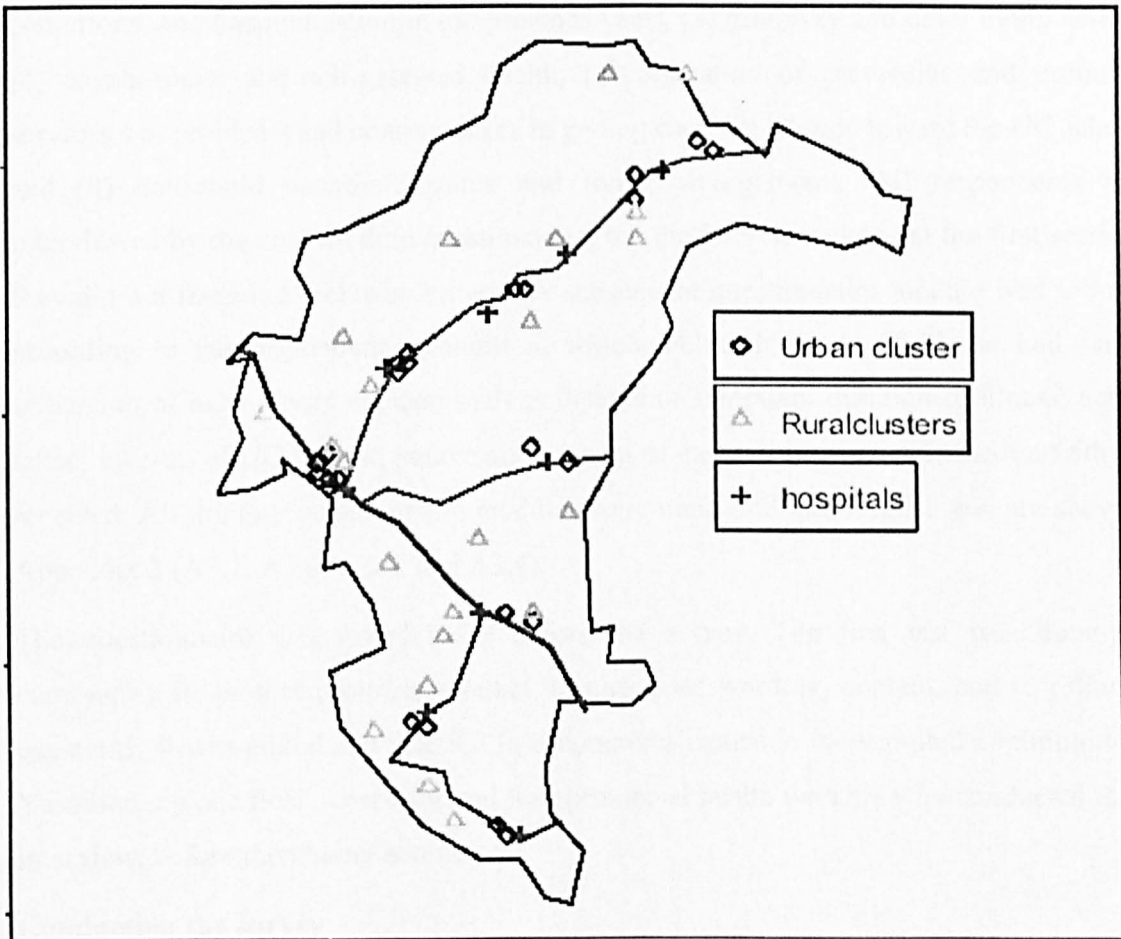
	Municipal areas				Non-municipal areas			
	No. elderly	No. cluster	No. Interview*	No. sample**	No. elderly	No. cluster	No. Interview*	No. sample**
Mueang	2,189	6	177	124	12,382	6	145	142
Sai Moon	1,217	4	96	89	1,893	1	24	20
Kud Chum	1,138	2	48	35	4,530	3	66	62
Kham Khuan Koeo	1,494	2	48	30	7,011	4	81	70
Pa Tiu	1,030	2	50	43	2,688	1	24	18
Maha Chana Chai	1,097	2	48	46	5,835	3	71	69
Kho Wang	730	2	48	36	2,462	1	24	23
Loeng Nok Tha	2,212	4	96	54	6,473	4	96	82
Thai Chareon					2,512	1	24	22
Total	11,107	24	611	457	45,786	24	555	508

\* Actual number of respondents interviewed

\*\* Number of respondents met the inclusion criteria

Note: The interview was terminated at the end of the first part of the main module questionnaire among those who did not meet the inclusion criteria.



**Figure 4. 4 Location of urban and rural clusters**

### Questionnaire development

A questionnaire was designed by adapting previous national Health and Welfare surveys and a standard measurement scale for subjective health (physical health, functional ability, and psychological well being) in addition to development by the researcher. The one-month recall period was chosen for self-reported illness, injury, and service utilization in order to capture use of services for chronic conditions. For hospitalization, a one-year recall period was employed since the conditions are more serious and the event less frequent.

The questionnaire included four modules, a core module and three service utilization modules for illness and services used in the previous month, chronic conditions, and hospitalization in the previous year. The core module questionnaire included eight sections:

(1) personal information and insurance status, (2) morbidity (acute illness, injury, chronic conditions, and hospitalization in the previous year), (3) disability and daily living activity, (4) psychosocial and self-assessed health, (5) utilization of preventive and promotive services, (6) problems and consequences in getting care, (7) attitude toward the UC scheme, and (8) household economic status and living arrangements. All respondents were interviewed by the core module questionnaire, but the interview ended at the first section if they did not meet the inclusion criteria. A subsequent questionnaire module was followed according to the respondent's condition, which included details of illness and service utilization of each illness episode such as disease or symptom, duration of illness, actions taken, take-up of UC benefit, source and amount of expenditure, and satisfaction with care received. All the four questionnaire modules were translated into English and are shown in Appendix 3 (A3.1, A3.2, A3.3, and A3.4).

The questionnaire was tested twice before the survey. The first test was done in a community in another province, Phuket, to check for wording, content, and to refine the questions. It was edited and retested in a community outside the sampled communities in Yasothon, by one field supervisor and four provincial health workers who conducted the re-interview, before then being adopted.

### **Conducting the survey**

The survey was conducted during 22 April – 8 May 2002 by 13 undergraduate public health students from a university in the Northeast, Khon Kaen University, and supervised by 2 master's degree supervisors. A two-day training programme was provided to all interviewers and supervisors to enable them to understand the objectives of the survey and the questions in the questionnaire. A practice interview was also done before the survey by all interviewers, under the supervision of the supervisors, in a community in Khon Kaen. The survey schedule is provided in Appendix 4.

In the field survey, the interviewers were organized into two groups, with one supervisor in each team during the survey. Three clusters were done in each day in order to finish the survey in the time available to the students. Each team conducted the survey separately in the morning and joined together in the afternoon for the third cluster of the day. An area survey was done by the supervisor on arrival at each cluster to explore the boundary and

location of households, then areas and households were allocated to each interviewer<sup>35</sup>. Systemic sampling was used to select the sample, i.e. selecting one then skipping three for a 100 household cluster; however, this was difficult to follow in some clusters where there were a limited number of elderly persons and dispersed households. Due to dispersal of clusters and the need to transfer survey teams each day, absent households had to be replaced immediately by an adjacent household. Moreover, for clusters with a limited number of elderly persons, replacement of sample from available areas nearby was done. All completed questionnaires were verified by the supervisors before leaving the field.

At the beginning of the survey, all elderly persons in the sampled household were counted as a sample, regardless of their insurance coverage, because it was thought that enough UC cardholders could be found; the average figure of CSMBS beneficiaries among the elderly was 14% in 2001. However, this was wrong, as CSMBS beneficiaries were more prevalent in urban areas, 24% compared with 8% of rural elderly in 2001. This problem was realized after a few days of the survey so only respondents who met the inclusion criteria were counted in the sample<sup>36</sup>. In addition, some key indicators, i.e. type of insurance, age (below and above 70), morbidity, and service use, were monitored by supervisors.

Information on village characteristics, socioeconomic condition, transportation system, health related issues, and social support for older people, was collected by the researcher. At the time of the survey, the researcher visited all clusters together with a research assistant and interviewed the village leader (village head or health volunteer), took photos of the villages/blocks, and provided support to the teams.

### **Re-interview**

Apart from quality control by field supervisors during the survey, a re-interview was conducted in a following week by four trained provincial health staff to test the reliability of data collection. Approximately 5% of samples or two clusters, one urban and one rural cluster, were purposively selected for the re-interview. The two clusters were surveyed in

---

<sup>35</sup> Maps of municipal areas including the boundary of blocks were provided by the NSO, but were not available for villages.

<sup>36</sup> Respondents who did not meet the inclusion criteria, such as CSMBS beneficiaries, were excluded from the analysis.



the first and second week by the different interview team and supervised by the different supervisor. The re-interview followed the same process as the first interview. Results on the degree of agreement of selected variables between the survey and re-interview are shown in Table 4.6.

**Table 4. 6 Degree of agreement of selected variables between the survey and the re-interview**

Content	Degree of agreement
Respondents	The same respondents being re-interviewed 90% (43 out of 48)
Age	Exactly agree 51 % for actual age and 84% for a 5-year interval age group. (kappa statistic for the latter = 0.777)
Sex	Exactly agree 98%, kappa = 0.973
Educational level	Exactly agree 86%
holding UC card	Exactly agree 98% , kappa = 0.726
Getting CSMBS	Exactly agree 98%, kappa = 0.926
Presenting chronic condition	Exactly agree 73%; 8% shifted from none to yes and 19% reverse, kappa = 0.462
Hospitalization	Exactly agree 95%, kappa = 0.841
Working status	Exactly agree 86%, kappa = 0.668
Living arrangement	Exactly agree 76%
Breadwinner	Exactly agree 68%, mostly shifted between self-spouse-children
Householder	Exactly agree 76%, mostly shifted between self-spouse-children
Land owner	Exactly agree 65%, 24% shifted from none to yes and 11% in opposite direction, kappa = 0.032
Refrigerator	Exactly agree 94%, kappa = 0.862
Television	Exactly agree 97%, kappa = 0.842
Radio	Exactly agree 78%, 17% shifted from none to yes, kappa = 0.507
Fan	Exactly agree 92%, 6% shifted from none to yes and 3% in opposite direction, kappa = -0.038
Bicycle	Exactly agree 78%, 14% shifted from none to yes, kappa =0.551
Motor bicycle	Exactly agree 75%, 17% shifted from none to yes, kappa =0.50
Motor	Exactly agree 94%, 6% shifted from none to yes, kappa =0.64
Car	Exactly agree 94%, kappa = 0.823

There were 48 respondents in the two clusters of the first interview but only 43 respondents (90%) were met and re-interviewed. Comparing interview and re-interview data for all 166 variables in the main module, 61 variables or 37% agreed exactly. Most of the remaining variables were substantially or almost perfectly in agreement except for some variables as shown in Table 4.6. Age was the least reliable, only half had the same age; however, if they were grouped into 5-year intervals, 84% of them were in the same age group (Kappa coefficient<sup>37</sup> 0.77). Amongst those with inaccuracies in age reporting, 40% of them reported a one year difference (+1 or -1) between the two surveys, and 20% of them reported a 5 years or more difference. Inaccuracy in age reporting could be the result of recall errors of the elderly, interviewers' errors in calculating age, and the difficulty in age calculation for the Thai elderly itself. Recall error made by the elderly between the two surveys might play some role but might not be much because the second survey was conducted only one week after the first survey. Most of the instances of a one year difference between the two surveys is better explained by differences in counting excess months over or under a complete year to be an additional year; this might be an error of either interviewers or respondents. However, the difference between the Thai year and calendar year might also play some role: the Thai New Year starts on the 13<sup>th</sup> April, not on the 1<sup>st</sup> January so this might cause confusion in calculating age of respondents. The 5 years or more difference between the two surveys might be explained by different ages reported by respondents according to the difference between their actual age and age in their birth registration. They might report their actual age to one interviewer but registration age to another interviewer. Errors in birth registration are due to delayed registration. The majority of older people were born at home and their parents might report to government officer later than the period of 15 days stated by law. To avoid being fined, a new date which was not beyond the period of 15 days might be reported.

---

<sup>37</sup> The kappa coefficient is a measure of agreement between 2 observers interpreting data. It measures the ratio of the actual agreement between observers beyond chance divided by the potential agreement beyond chance. The coefficient ranges from <0 to 1, the higher the number the greater the level of agreement between the two observers. ( strength of agreement: <0 poor, 0-0.2 slight, 0.21-0.40 fair, 0.41-0.60 moderate, 0.61-0.80 substantial, and 0.81-1.00 almost perfect).

There were fewer respondents with chronic conditions in the re-interview, this might be due to differences in interpretation; the health staff might interpret the condition based on medical criteria, while interviewers might rely on folk definitions since they had a non-medical background. Disagreement on owning durable assets mostly shifted from 'none' in the survey to 'yes' in the re-interview.

It is believed that income and expenditure data are the least reliable due to difficulties in data collection in developing countries. A paired t-test was done to compare the differences in income and expenditure data between the two interviews; results are presented in Table 4.7. Average household monthly income reported in the re-interview was greater than that in the survey; however, the paired t-tests for both income and expenditure data were not significantly different. It was assumed that experienced health staff would get more accurate data than the interviewers because they knew more about people and the contexts of surveyed areas. This suggests that the survey data were reasonably reliable.

**Table 4. 7 Paired t-test for household income and expenditure**

	Household income		Household expenditure	
	Survey	Re-interview	Survey	Re-interview
Mean	4,022	4,894	2,666	2,674
N	36	36	35	35
Std. Deviation	3,922	5,815	2,065	2,300
Std. Error Mean	654	969	349	389
Paired Differences	Survey – re-interview		Survey – re-interview	
Mean	-871.25		-8.51	
Std. Deviation	5,718.98		2,299.36	
Std. Error Mean	953.16		388.66	
T statistics	-0.914		-0.022	
Degree of freedom	35		34	
Sig. (2-tailed)	0.367		0.983	

### Data processing and data analysis

Completed questionnaires were coded by field supervisors and rechecked by the researcher on a daily basis during the survey. Data were double entered by different teams to countercheck for reliability by using a database programme (FoxPro version 7). Data

cleaning was done, employing SPSSPC version 10, by the researcher. Data analysis was done using SPSSPC version 11 and Strata 7 programmes.

### **4.3.3 In-depth interviews and focus group discussions**

In order to understand the process of implementation, provider responses, and implications for access to care and financial protection for the elderly, three groups of stakeholders were interviewed: health administrators and managers, providers at all levels, and elderly beneficiaries. How the policy has been implemented, problems, and constraints were the main focus in the first group. Effects of the policy on health facilities and providers in addition to their adjustments were the main focus in provider groups. What changes people had seen in terms of service provision, quality of care, and financial burden, was the focus in the discussion among elderly beneficiaries. The approach primarily aimed to serve objective 1 (Chapter 5) and objective 4 (chapter 8).

#### **Sample**

Target groups and numbers of participants for in-depth interviews and focus group discussions are shown in Table 4.8. Seven key persons from the Provincial Health Office (PHO) and hospitals were purposively selected and interviewed by a semi-structured open-ended questionnaire. Eight groups of providers and one group of health managers were invited to participate in focus group discussions. Six groups of older people, divided by age (below and above 70) and area of residence (urban and rural with and without a primary care unit-PCU), were invited to join focus group discussions. Selection of elderly participants was done by local health staff. There were a total of 106 informants, 6 health administrators and managers at provincial level, 62 providers at all levels, and 38 elderly participants.

#### **Issues in interview/discussions**

A semi-structured open-ended questionnaire was developed for the interview or discussion with each group. An outline of the questions for in-depth interviews and focus group discussions with each group is provided in Appendix 3 (A3.5, A3.6, and A3.7).

**Table 4. 8 Participants in-depth interviews and focus group discussions**

Status	Position	No. of participant	Method
Health administrator and Project manager	Provincial Chief Medical Officer (PCMO)	1	In-depth
	Deputy Provincial Chief Medical Officers	2	In-depth
	Head of insurance management section	1	In-depth
	Non-communicable disease control section (NCD)	2	Focus group
Providers	Deputy director of the provincial hospital	1	In-depth
	Director of district hospital*	2	In-depth
	District Health Officer	6	Focus group
	Physician in the provincial hospital	4	Focus group
	Nurse in the provincial hospital	8	Focus group
	Claim unit in the provincial hospital	8	Focus group
	Nurse in district hospitals	8	Focus group
	Health worker who are responsible for NCD	8	Focus group
	Nurse in primary care unit (PCU)	8	Focus group
	Health workers in primary care unit (PCU)	9	Focus group
Beneficiaries aged below 70	Urban area where a PCU is located	7	Focus group
	Rural area where a PCU is located	7	Focus group
	Rural area without a PCU	6	Focus group
Beneficiaries aged 70 and above	Urban area where a PCU is located	6	Focus group
	Rural area where a PCU is located	6	Focus group
	Rural area without a PCU	6	Focus group
Total		106	

Note \* One deputy PCMO was also acting as a director of two district hospitals. The two directors of district hospitals were selected according to their experiences in the province; the other four directors were not selected since they were young physicians with less than 2 years experience in this province.

### Conducting interviews/ focus group discussions

The in-depth interviews and focus group discussions with health administrators, managers, and providers were conducted during July - August 2002. For the focus group discussions among elderly beneficiaries, 4 groups were conducted in September 2002 and another two



groups were done in November 2002. The schedule of interview and discussions are provided in Appendix 4. All sessions of in-depth interviews and focus group discussions were conducted by the researcher and facilitated by one local research assistant. Tape recording was done with the consent of interviewees and participants and transcribed into texts for all interview and discussion sessions.

There are two issues of concern relating to biases according to the researcher's status and the selection of elderly respondents by health workers. The researcher status, as an officer from the Health Insurance Office, MOPH, might have had some possible effects on information obtained from health workers. For example, specialists in the provincial hospital might over-state their arguments against the strengthening primary care policy in order to seek to influence the policy. Some health workers might over-support the policy in order to please the researcher. However, the fact that the researcher was a technical advisor, and not in a position to directly influence the policy, made this less likely. At the beginning of the interview and discussion, all respondents were informed about the objectives of the study, assured about confidentiality of personal information, and were told that the data would be analysed as a group, not by individual. In addition, cross-checking and triangulating data from various groups and methods was done to help address this problem.

The selection of focus group discussion participants by local health workers is another issue of concern in terms of possible biases in information obtained and interpretation of results. One bias found from the selection was that only older participants residing in nearby villages participated in the discussions. The selection of older respondents by health workers might be biased toward those favouring the policy and they might not be able to talk freely in the discussions. However, local health workers were not allowed to join the discussions. The same information and processes as that employed in the provider group was adopted to control for possible biases, in addition to focussing on general issues relating to the UC scheme instead of those affecting a particular health facility.

### **Data analysis**

Data from the interviews/discussions were analyzed on a sentence basis in Microsoft Word. Sentences were analyzed and assigned to issues; attitude toward universal coverage, differences of the UC scheme from the MWS, insurance management, budget allocation

and payment methods, strengthening primary care, provider adjustments, perceived changes in service provision by older people, care seeking behaviour and coping with health care costs among beneficiaries, and experiences of catastrophic payments.

To assure reliability and validity of the information gathered from the interviews and discussions, information from different groups and other sources, i.e. reports, and the survey was cross-checked (triangulation).

#### 4.3.4 Case studies of catastrophic expenditure

The objective of the case studies of catastrophic expenditure was to obtain in-depth understanding of reasons for catastrophic expenditure among the elderly under the UC scheme, in addition to the implications for households in terms of costs and coping (objective 4).

##### Case selection

The initial plan was to draw cases with a high burden caused by medical care costs from the survey by various criteria, such as age, area of residence, presence of chronic condition and disability; however, there were not enough cases to meet the criteria. So cases available in the survey were selected and additional cases were added from the pilot study and the provincial hospital. There were only eight case studies; three from the survey, one from the pilot study, and four from the provincial hospital. Cases from the provincial hospital were drawn from the operating records of the eye department and fee exemption records of the

**Table 4. 9 Characteristics of cases in case study**

Case	Area	Age	Sex	Illness	Reason for catastrophic payment	Source
1	Rural	70+	Male	Cataract	Informal payment	Survey
2	Rural	70-	Female	Cataract	Non-compliance with the UC	Pilot study
3	Rural	70+	Male	Cataract	Informal payment	Hospital
4	Rural	70-	Male	Appendicitis	Uninsured	Hospital
5	Urban	70-	Male	Heart disease	Non-compliance with the UC	Survey
6	Rural	70+	Female	TB knees	Non-compliance with the UC	Survey
7	Rural	70+	Female	Cataract	Informal payment	Hospital
8	Rural	70-	Male	Traffic accident	Uncovered service	Hospital

social welfare department. The intraocular lens operation was a focus since the survey revealed that lens replacement caused financial difficulty. Characteristics of the cases are presented in Table 4.9.

#### **Data collection**

The cases were visited and interviewed at their home by the researcher during September – November 2002. Two cases (case #2 and #5) were visited three times before completed information was collected. Information collected included individual and household characteristics, illness, service utilization, payments for medical care and other items, source of payment, and implications in terms of costs and coping.

#### **Data analysis**

The cases were described case by case in order to illustrate problem characteristics according to the reason for catastrophic payment; non-compliance with the scheme, informal payment, service uncovered by the UC.

### **4.4 Limitations of the study**

Lack of information on the situation in the study province prior to the UC policy is a major weakness of this study. The study could only document the existing situation in terms of access to care and financial protection for the elderly, but it was not able to provide information on to what extent the improvement was due to the UC scheme. So results from this study will be compared with available information from the national surveys and other studies.



## **CHAPTER 5: UC POLICY IMPLEMENTATION**

### **5.1 Introduction**

In order to achieve universal coverage with effective health care risk protection at the least cost possible, reforming financial management and the service delivery system was included in the UC scheme. The UC scheme provided comprehensive health benefit to all older people without co-payment. A closed-end performance-based payment method was chosen to pay health facilities instead of the historical-based budget allocation. The scheme also put emphasis on primary care by choosing a primary care unit as main contractor. People have to register with their local hospital which acts as a primary care gatekeeper. The literature review revealed that how effectively the insurance in a particular country performs its two basic functions depends on institutional arrangements of the system, health system support, and the benefit package. This chapter aims to assess how effectively the UC scheme was implemented in Yasothon, its impacts on providers in addition to their responses, and implications for the elderly in terms of access and quality of care and protecting them from catastrophic payment. A brief methodology and an analytical framework are provided in the next section. Results of the study are presented in three aspects according to the policy components: providing universal health coverage, budget allocation and payment method, and service delivery system. Discussion of the results and conclusion are provided subsequently at the end.

### **5.2 Methodology**

A qualitative approach, in-depth interview and focus group discussion, was employed in order to understand the process of UC implementation, impacts on providers and their responses, and implications for the elderly in terms of access and quality of care. Three groups of stakeholders were purposively selected for in-depth interviews and focus group discussions: health administrators and managers who were responsible for insurance and system management, providers at all levels, and elderly beneficiaries in both urban and rural areas. Details of number of respondents and their positions have already been presented in chapter 4.

Three main policy components of the UC scheme were discussed with informants: universal health coverage, budget allocation and provider payment, and strengthening primary care by establishment of PCU. For each policy component, four aspects were discussed; these included attitude towards the policy component, policy implementation and its constraints, impacts on providers and their responses, and implications for the elderly in terms of access and financial protection. Different aspects or policy components were emphasized for each group in the interview or discussion. All participants were asked about their attitude towards each policy component. The issue of policy implementation and constraints was given more emphasis among health administrators and managers, while problems and impacts of the policy on providers were emphasized more among providers. Implications of the policy components for the elderly in terms of access and quality of care were emphasized more among elderly beneficiaries. Information gathered from each group was cross-checked in the analysis and with other sources such as information gathered from the household survey or reports. Data from the interviews/discussions were analyzed on a sentence basis in Microsoft Word. Sentences were analyzed and assigned into four aspects of each policy component. The analytical framework used in the analysis is shown in Table 5.1.

**Table 5. 1 A Framework for data analysis of the UC scheme**

Aspect of analysis	Policy components		
	1. Providing universal coverage for the elderly	2. Budget allocation and provider payment	3. Establishment of PCU
1. Attitude			
2. Policy implementation			
3. Impacts on providers and their responses			
4. Implications in terms of access and quality of care for the elderly			

## 5.3 Results

Results from the study are presented in three main sections according to the policy components: providing universal health coverage for the elderly, budget allocation and provider payment, and establishment of PCU. Each section includes all of the four aspects from all participant groups: attitude toward the policy, policy implementation, impacts on providers and their responses, and implications for the elderly.

### 5.3.1 Providing universal health coverage for the elderly

#### 5.3.1.1 Attitude towards the policy

There was a consensus amongst health administrators and providers about providing universal health coverage for the elderly. Three main reasons were raised to support the policy: entitlement, the relatively high health need among the elderly in contrast to their relatively low ability to pay, and repaying the elderly.

*"...it is the basic right, everyone should get at least basic essential care..."*

(Health administrators, District hospital directors, and District health officer group)

*"Older people have less cash while they have greater morbidities, especially chronic conditions. In addition, they had contributed to the society for their whole life so we should repay them by providing them security at the end of their life..."*

(Health administrator)

*"...we agree with the policy for older people...it is essential for them since they have no income and someone still has to support their children..."*

(Physicians in the provincial hospital)

Moreover, providers also suggested that the scheme should cover all elderly people including those under the CSMBS. This is due to the problem of retrospective reimbursement for ambulatory care of CSMBS elderly beneficiaries. CSMBS elderly beneficiaries have to spend out-of-pocket and are reimbursed from the government office where their child works. This is problematic if the elderly stay away from their child who

will reimburse the bills, since it takes time and sometimes no money is returned from their child.

*"The scheme should cover all older people including those under the CSMBS since they don't have cash to pay for care so the hospital has to exempt the fees for some of them."*

(Staff in the claim unit of the provincial hospital)

*"It is problematic for older people to pay out-of-pocket, especially those who do not stay with their child who will reimburse the bills for them. They have less available cash to pay the bill and the reimbursements sometimes do not come back from their child ...."*

(Nurses in district hospitals)

Among elderly beneficiaries, there was no consensus view about this issue. Some of them agreed that it should be provided to all, while some of them thought that it should be given to only those who were poor, as government welfare for the poor.

*"For those who are rich, they have money and are able to pay by themselves. Moreover, the rich look at the UC card as an inferior card and they will not use it ...."*

(Elderly group aged 70 and above in a rural village where a PCU is located)

*"This is a government welfare programme so it should be given to only those who are poor."*

(Elderly group aged below 70 in an urban area)

*"The government would like to help the poor and older people. We are poor. For those who are not poor, they should not get the card."*

(Elderly group aged 70 and above in an urban area)

Two reasons were raised among those who agreed with providing it to all older people: lower ability to pay among the elderly and repaying the elderly.

*"...it should be provided to all. When getting old we don't have income and depend mainly on children. If our children don't support us, we don't know where to get the money."*

(Rural elderly group aged 70 and above)

*“It should be provided to all since older people already contributed to the society when they were young...”*

(Elderly aged 70 and above in a village where a PCU is located)

### 5.3.1.2 Policy implementation and constraints

The UC scheme is a populist policy of the government, that is intended to represent ordinary people’s needs and wishes, so it carried out extensive campaigns and advertising. The Provincial Health Office (PHO) was the main implementer at provincial level for beneficiary registration and managing insurance benefits.

#### *Beneficiary registration*

In order to reach all people within a short period of time, a population registration database was employed for beneficiary registration in addition to a community survey conducted by health workers. People were simply assigned to their local district hospital in the first year without choice. Employing the population registration database without the CSMBS beneficiary database resulted in duplication of registration; approximately 5% of UC cardholders were duplicated mainly with CSMBS (Table 5.2). However, the duplication will automatically disappear when the CSMBS database is ready.

**Table 5. 2 Elderly beneficiary registration, Yasothon province 2002**

	Urban	Rural	Total
UC alone	92.7	95.5	94.2
UC + CSMBS	5.9	3.9	4.9
UC + Private insurance	0.2	0.0	0.1
UC + Other insurances	0.2	0.4	0.3
Uninsured	1.0	0.2	0.6
Total	494	534	1,028

Source: Household survey

#### Providing information, education, and communication

In order to achieve smoother policy implementation, a call centre was set up in the MOPH, PHO, and all contracting hospitals. It aimed to provide information to people and solve problems faced by beneficiaries in getting care and benefit in order to create greater

satisfaction with and prestige of the scheme among the people. In practice, the centre in the PHO did not work actively due to inexperience and fears of negative consequences arising from the complaints.

*“The call centre is a new job and has not been actively implemented. People still don’t know their rights. We did not perform it effectively, partly due to inexperience, but I hope it will be better in the future...”*

(Health administrator)

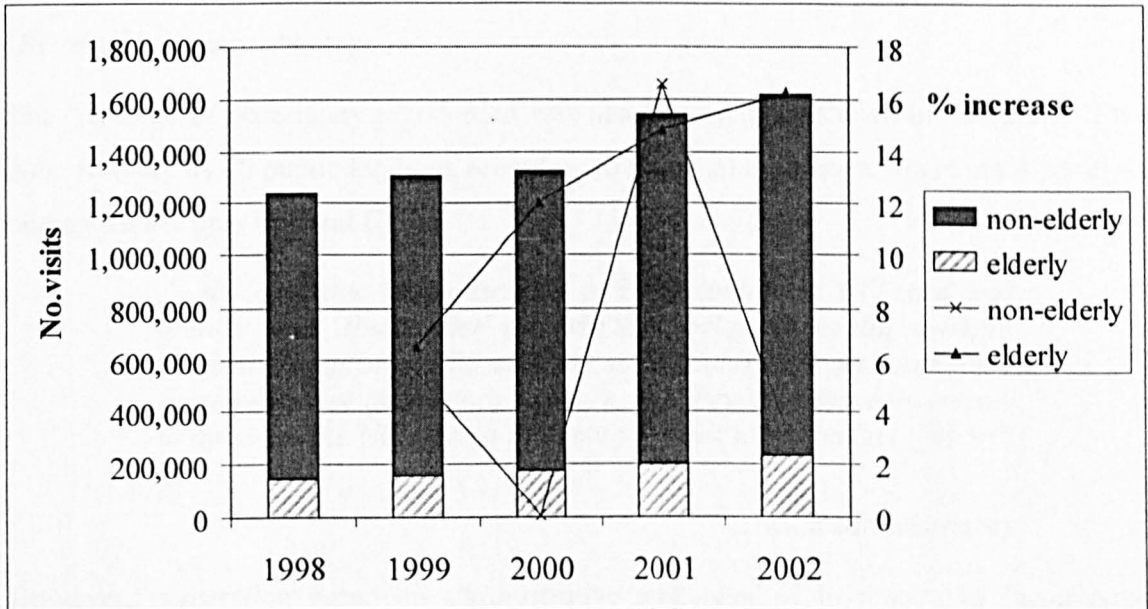
*“Few people know this channel. We also don’t want them to complain because it might result in some undesirable effects on the province. Anyway we provide a channel for them if there are problems in getting UC benefit”*

(Health manager)

### **5.3.1.3 Impacts on providers and their responses**

#### **Increase in workload**

Theoretically, demand for health care increases as the price goes down; therefore, providing universal health coverage will increase utilization and overall workload among providers. Reports from the provincial health office revealed that this is true, as shown in Figure 5.1. The columns represent the number of outpatient visits and the lines represent the percentage change in outpatient visits among the elderly and non-elderly groups. There was a sharp increase in services used by the non-elderly in the first year of its implementation (2001), 16%. Service utilization among the elderly had been increasing before the UC policy and it was accelerated by the policy. Service use among the elderly increased 6 and 12% in 1999 and 2000 respectively, and increased by 15 and 16% in 2001 and 2002 respectively. However, few complaints were made among providers about the increase in workload arising from universal health coverage provision.

**Figure 5. 1 Number of outpatient visits, Yasothon province 1998 – 2002**

Source: Service utilization reports, Yasothon province 1998-2002

#### Greater responsiveness of providers

As the government's populist policy, together with the extensive advertisements through mass media, the policy appeared to have accelerated the quality improvement programme and providers' responsiveness in service provision.

*"The UC scheme accelerates hospital accreditation which was previously less emphasized. Requiring hospital accreditation for contracted hospitals together with messages delivered through mass media bring about better knowledge among people and encourages us to improve this matter..."*

(Nurse in district hospital)

*"We improve our services to provide greater convenience for patients, listen to their comments more. It is a social trend and we are afraid of having any negative consequences if there was a complaint to politicians; this is the government populist policy announced on television everyday..."*

(District hospital director)

*"Currently, there are nurses providing information and guidance when you need."*

(Elderly group aged <70 in rural area)



### 5.3.1.4 Implications for the elderly

#### Universal insurance coverage

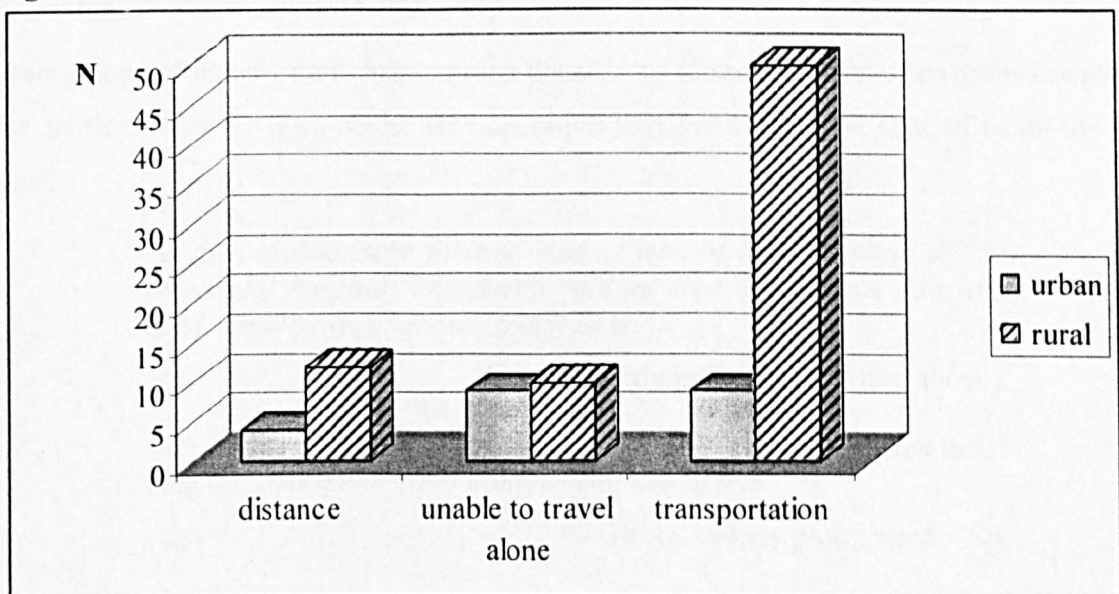
The coverage of beneficiary registration was nearly perfect, as shown in Table 5.2. It was done actively by all public facilities according to financial incentives, to get more per capita budget for the province and CUP.

*“...the coverage of registration and distribution of UC card was greater than that under the MWS. Previously, health workers neglected to provide the card to some elderly people, especially those who were able to pay for care. But they have more incentives to do so for the UC since it is directly related to the budget they will get...”*

(Health administrator)

However, registration based on administrative area resulted in reports of inconvenient access to care at the registered hospital by some elderly. Information from the household survey showed that 14 and 5% of urban and rural elderly reported inconvenient access to their registered hospital. Transportation problems and distance were the two main reasons for such reports among those in rural areas (Figure 5.2). Unable to travel alone due to limited physical mobility was another reason, but it was not different by geographical area.

**Figure 5. 2 Reasons of inconvenience in access registered hospital**



Source: the household survey



However, no such complaint was made in the focus group discussions among the elderly. In addition, it seemed that they accepted the rule set by the province.

*"When we are ill, we go to the health centre, then to the registered hospital if it is not improved. The doctors may refer you to the provincial hospital if they can not treat you. This is the rule."*

(Rural elderly group aged below 70)

Greater satisfaction with services provided by the scheme

Improvement of availability of service and greater responsiveness of providers were noticed by elderly participants, particularly at health centre and district hospital.

*"...the current staff at the health centre provide prompt treatment, we don't have to wait so long; moreover, there is a free ambulance service available for those who need referral to the district hospital."*

(Elderly aged <70 years in rural area)

*"Services provided by Kho Wang hospital are good; meals are available for inpatients, a wheelchair or stretcher is promptly provided when you arrive at the hospital. Currently, there are nurses providing information and guidance when you need it."*

(Elderly group aged <70 in rural area)

Remaining problem: informal payments

Two groups of elderly participants in the discussions raised the issue of payments required for artificial lens for intra-ocular lens operation (IOL) of cataract in spite of using the UC card.

*"I spent 5,000 Baht for one side of lens in the operation at the provincial hospital. The doctor told me that if I did not have the card, I had to spent about 10,000 Baht"*

(Urban elderly group aged 70 and above)

*"My husband got an eye operation 3 months ago at the provincial hospital and spent 5,000 Baht for one side of lens."*

(Rural elderly group aged <70)

### 5.3.2 Budget Allocation and Provider Payment

An exclusive model was adopted by Yasothon and 20% of salaries were included in the payment adopted<sup>38</sup>. A flat rate capitation for outpatient care (OP) and preventive and promotive services (P&P) was adopted to pay CUPs. The same weight for each DRG group was applied to all levels of hospital regardless of the difference in cost of services provided by the provincial and district hospitals. This was based on the argument that the same price should be applied to similar services purchased from each hospital. For payment within the CUP, the PHO let each CUP decide. However, in order to protect health centres, the MOPH required all hospitals to allocate a sufficient budget to health centres for service provision.

#### 5.3.2.1 Attitude towards the policy

Yasothon, like most provinces in the northeast, gained more budget than before according to the per capita allocation criterion, due to the fewer number of staff in relation to its population. The province was expected to gain over 100 million Baht in 2002 or 37% more compared with the previous year<sup>39</sup>. Almost all health administrators and providers agreed with the allocation criterion, but one director of a district hospital did not agree with including salary in the allocation criterion.

*"I agree with the allocation criterion. Previously, the allocation was based on size of hospital and administrator or politician's preferences; some provinces got more budget in spite of fewer burdens in term of population size. In the Northeast, there is higher burden of work but we usually got fewer staff and budget. Allocating budget based on population size will provide more budget to provinces where there are higher burdens of work."*

(Health administrator and hospital manager)

*"The province is expected to gain over one hundred million Baht according to the new allocation criterion so the budgets are sufficient, but the remaining problem is the management issue..."*

(Health manager)

---

<sup>38</sup> The province ensured 80% of salaries for all CUPs in the first year by deducting them from the UC budget, and the performance-based payments were paid from the remaining budget.

<sup>39</sup> NESDB, Government current expenditure per capita Fiscal Year 2001 in Yasothon province was 730 Baht; [http://www.nesdb.go.th/public%20expense/Appendix44/Table15\\_2544.pdf](http://www.nesdb.go.th/public%20expense/Appendix44/Table15_2544.pdf) accessed on 10/11/03.

*"I don't agree with including salary in the per capita budget since salaries account for the majority of the budget and tertiary hospitals will be in trouble in doing so. Resources in tertiary hospitals are used by not only beneficiaries within the particular district or province but also beneficiaries from other districts or provinces."*

(District hospital director)

In general, both health administrators and providers agreed with the exclusive model adopted by the province since all of them were familiar with it from the Health Care Reform project (HCR) and the Social Investment Project (SIP). However, the remaining problem was the low per capita budget for inpatient care.

*"We adopted an exclusive model as we used it in the SIP project; however, the problem is that the payment for inpatient care was less than 4,000 Baht per weight of DRG<sup>40</sup>."*

(Health manager)

*"Pooling the inpatient budget is good since it reduces problems in referral system and ease access to inpatient care for patients. The problem was just incurred when the payment received for inpatient care was less than the costs."*

(Provincial hospital manager)

All providers were satisfied with the capitation payment for P&P; however, there was concern among health managers about their performance in relation to these activities.

*"The new payment method switches the top-down programme for preventive and promotive services to a bottom-up system, so I wonder whether providers are able to initiate work by themselves. Moreover, health workers were trained to deal with disease and curative care, so it is questionable how well they are able to do health promotion."*

(Health manager)

Among the elderly, this issue was not discussed since it is a management issue, and people, in general, did not know about it.

---

<sup>40</sup> The rate of 4,000 Baht per weight of DRG has been employed by the Health Insurance Office to represent non-salary recurrent costs of inpatient care to pay high cost care and it was used as a guideline to pay inpatient care in many provinces.

### 5.3.2.2 Policy implementation and constraints

#### Unclear role, function, and capability of the PHO

The new financial arrangements imply that the PHO has to change its role from direct control over the budget to purchasing services from providers. However, the unclear role and function of the PHO in addition to limited capability made them unable to perform active purchasing functions: selective purchasing, regulation, and monitoring on quality of care.

*"Currently, we act as both purchaser and provider; the new structure is not clear whether we will be a purchaser..."*

(Health administrator)

*"We tried to set some financial punishment measures to regulate CUPs; however, in practice, we were unable to do so since the MOPH required all provinces and CUPs to allocate budget to all health facilities without delay, so we could not reserve some part of the budget to manage..."*

(Health administrator)

*"Regulation did not work well because there are uncertainties in the system and provincial officers did not know what and how to do it, especially when they found that CUPs failed to achieve the standard or target. It might be partly due to inappropriateness of organizational structure."*

(Health administrator)

*"As a purchaser, we did not perform well since quality of care and discrimination in service provision has not been monitored..."*

(Health manager)

The payment methods also altered the relationship between the PHO and providers. Previously the PHO had direct control over the budget; the new financial arrangements provided hospital autonomy while diminishing provincial authority in budget control.

*"The relationship between the PHO and providers was changed, previously it was a direct command and PHO was involved in what and how to do with the budget, but providers, currently, have more autonomy; they can do what they would like to..."*

(Health manager)

*"Currently, everything is under the UC and nearly all the budget are retained at CUP; the problem is how the money will be used to generate health promotion and prevention activities. No explicit plan has been created by providers to use the money for these activities..."*

(Health manager)

#### Mismatch of resources: more budget but fewer staff

It was expected that more budget going to the Northeast and rural areas would attract more health workers to these areas. However, lack of explicit MOPH policy on human resource distribution made it difficult for the province or hospitals to recruit more health staff, especially doctors, since the MOPH is the major employer and supplier. In addition, the Civil Servant Act protects salaries of all government workers; hence, it was difficult to handle issues around redeployment of medical personnel.

*"Including salary in the per capita budget will encourage redistribution of health staff. Previously, hospital directors accepted those who would like to move in easily since they did not have to pay the salaries from their budget. According to the new system, they have to think more about personal management."*

(Hospital managers)

*"It is difficult to get more doctors without explicit MOPH policy on human resource distribution<sup>41</sup>. The MOPH should not allocate more doctors to central region since it is already overcrowded."*

(Health administrator)

#### Payment within CUP

Payment within CUP for ambulatory care varied according to agreement of the individual CUP. Most CUPs employed a point system<sup>42</sup> to allocate the capitation budget for OP. However, one CUP allocated the capitation budget directly to all facilities within the CUP and payments between facilities were made when there were cross-boundary cases.

---

<sup>41</sup> It is an obligation for all new graduated doctors to work in the public sector at least for three years and the MOPH is the major employer and distributor.

<sup>42</sup> Services were weighted by unit cost of each level and total points were calculated by multiplying number of visits with the weight of each level. Then the capitation budget was allocated to each facility according to service points gained.

However, in August 2002, the provincial committee made an agreement to employ a standard point system for the payment for OP within CUP.

#### Paying for prevention and promotion activities (P&P)

The PHO set the target performance for prevention and promotion activities. Eighty percent of the capitation budget of P&P was allocated directly to each CUP by capitation and another 20% would be paid to each CUP at the end of the year as a bonus according to their performance. The province asked CUPs to advance the first 40% of the budget to facilities by capitation and pay the remaining 40% later according to their performance. However, in practice, most CUPs allocated the entire budget received in one go to facilities by capitation. In addition, how well each facility achieved the performance target set by the PHO was unknown since assessment had not been done at the time of this survey.

#### 5.3.2.3 Impacts on providers and their responses

According to the per capita budget for ambulatory and inpatient care and the payment adopted, there were different impacts on the budget received by different levels of health facilities. Health centres gained the most on account of the high capitation rate for ambulatory care<sup>43</sup>, while the provincial hospital was the loser on account of the low payment for inpatient care and the relatively high cost of care provided by the hospital compared with district hospitals.

##### Health centre

The larger available budget allowed health centres to extend service to out-of-working hours and weekends in addition to better availability of drugs and equipment.

*"More available budget makes us able to provide out-of-working hours services. It also brought about more availability of drugs and equipment."*

(Health workers)

---

<sup>43</sup> The capitation rate was calculated based on 100% compliance with the scheme; in practice, compliance with the scheme was lower than that calculated.

*"Currently, the health centre is open until 8 p.m. and during the weekend."*

(Rural elderly group aged below 70)

*"Currently, there are nurses providing care at the health centre and services are available in the evening and weekend."*

(Rural elderly aged 70 and above)

Being a CUP encouraged greater coordination and support between the hospital and health centres within the CUP; however, sometimes it also raised conflict or suspicion between them relating to the budget.

*"There were more resources supported from the hospital, the hospital provided training for health workers and we planned together on human resource development and health interventions. We are working closely at the moment."*

(District health officer)

*"The relationship between hospital and health centre is improved in all districts except in the capital district where the hospital does not support health centres as most district hospitals do..."*

(Health Administrator)

*"There were some conflicts between hospitals and health centres but not serious, except in one district where the hospital got financial constraints."*

(Health administrator)

#### District hospital

Most hospitals gained budget through the capitation payment, but some hospitals did not. One hospital received a lower budget because of its relatively low number of beneficiaries, less than 30,000 beneficiaries, and required financial transfers to sustain service provision<sup>44</sup>. The amount of budget received from the payment methods adopted was insufficient to run the hospital. The hospitals that paid health facilities within the CUP by

---

<sup>44</sup> It was observed in most provinces that hospitals in small districts with populations less than 30,000, such as those in remote areas, would be financially unviable.

capitation gained less than those employing the point system. One hospital had financial constraints before the UC policy; they then had to tightly control hospital costs.

*“It is problematic in Thai Charoen district where the population is small, the per capita budget received was not sufficient to maintain service provision so we reallocated the reserved fund to support the hospital.”*

(Provincial health administrator)

Parallel with the UC policy, new per diem and overtime payment rates, which were much higher than the previous rates, were announced by the MOPH, resulting in overall costs of health facilities increasing. Hospitals became more cost conscious and implemented some cost saving measures. Common strategies adopted by most hospitals were improving efficient use of staff overtime and drugs. The number of nurses during out-of-working hour shifts was adjusted to fit with workload. Limiting tablets of symptomatic drugs prescribed by nurses out-of-work hours was another measure adopted by some hospitals, since patients usually come back to see a doctor during weekdays.

*“We did a cost analysis and cost reduction plan but mostly for non-medical expenses.”*

(District hospital nurse)

*“We did a cost analysis and cost reducing plan, we tried to avoid labour costs but it was inevitable, then we limited number of staff for evening and weekend shifts.”*

(District hospital nurse)

*“We limited tablets of drugs prescribed by nurses during evening and weekend.”*

(District hospital nurse)

Three district hospitals reported doing more operations, but doctor's preference and readiness of the system might be the reasons for two of these, while the hospital with previous financial constraints tightly controlled referral in order to reduce expenses.

*“Doctors did more operations in my hospital, but this may not directly relate to the UC policy; doctor's preference may be more important.”*

(District hospital nurse)



*"There are four doctors in the hospital so we do more operations. We would like to improve our services when we are ready to do so; it is not related to the UC policy."*

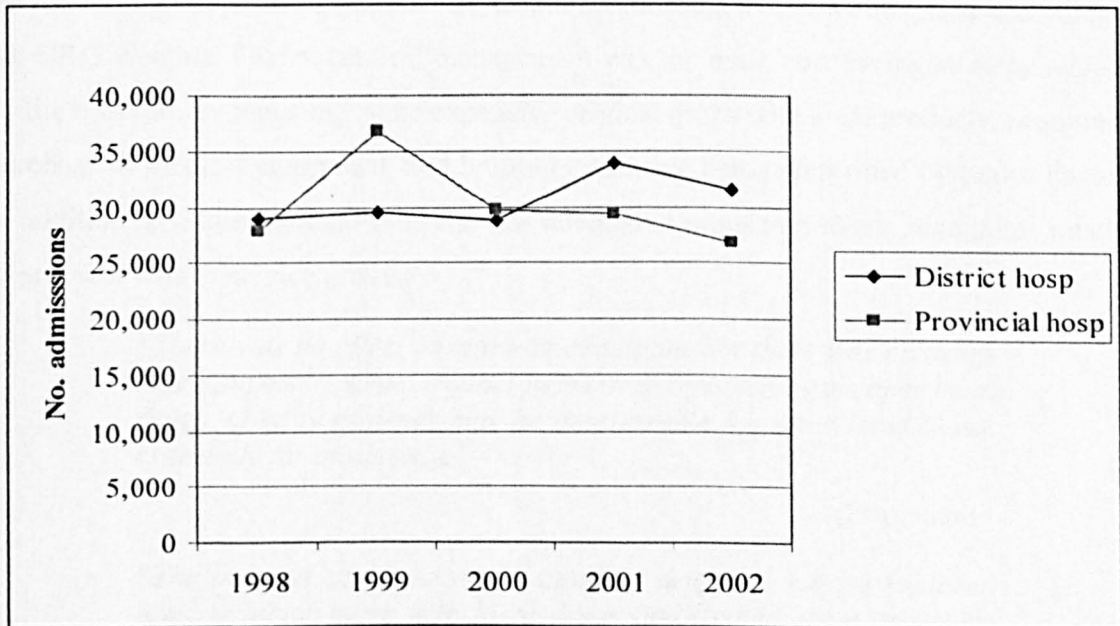
(District hospital director)

*"All doctors in my hospital are encouraged to do more operations and only those over our capacities will be referred. To refer a patient, a justification is required."*

(District hospital nurse)

Data from reports showed that there was a sharp increase in admissions in district hospitals while there was a decreasing trend of admissions in the provincial hospital (Figure 5.3). Admissions in district hospitals increased sharply in the first year of UC implementation (2001), 18% on average, with an extremely high increase, 50%, in the hospital with a strict policy on referral. The high increase in hospitalization in district hospitals suggests there has been a reallocation of inpatient care between district hospitals and the provincial hospital.

**Figure 5. 3 Number of admissions by types of hospital 1998-2002, Yasothon**



Source: Service utilization reports, Yasothon 1998 - 2002

Patient-initiated demand for hospitalization might exist in district hospitals, especially for people in rural areas since transportation is problematic and it is difficult for them to come

back for follow up. More responsiveness of providers to patient demand according to the government popular policy might play some role.

*“Currently, patients get what they want in my hospital otherwise they make complaints. Patients who already prepared themselves to stay in hospital will get it.”*

(District hospital nurse)

*“But this (admission initiated by patients) is less likely in my hospital because the wards are usually overcrowded.”*

(District hospital nurse)

### Provincial hospital

The hospital gained relatively less budget than district hospitals from the capitation for ambulatory care due to the relatively high unit cost of the provincial hospital. The payment received for a weight of DRG was less than 4,000 Baht, which was less than the costs. Considering this under-payment for the provincial hospital, the PHO board agreed to pay the hospital 4,000 Baht per DRG weight from the 4<sup>th</sup> quarter of fiscal year 2002 onward and the remaining budget for inpatient care would be allocated to district hospitals according to the DRG weights. Pharmaceutical management was the main cost saving strategy adopted by the hospital, by replacing some expensive original drugs with local products, postponing purchase of medical equipment, and limiting expensive items prescribed by junior doctors. In addition, a single standard drug list was adopted in order to prevent complaints relating to provider bias in service provision.

*“There was no effect on working conditions but there was on drugs and equipment; some original items were replaced by cheaper local drugs. Quality of drugs may be questionable for some local items, especially for antibiotics.”*

(Physicians)

*“The hospital adopts a single standard drug list, but we replaced some original items with local drugs and limited some expensive items prescribed by junior doctors.”*

(Hospital manager)

The hospital also put emphasis on the referral system and verification of eligibility; however, this was required by the MOPH in order to strengthen primary care and efficient

use of resources. In order to save costs, the hospital would refer patients to only the MOPH tertiary hospital since the charges at university hospitals were generally higher. Patients who do not follow the referral line and bypass to use care in a tertiary hospital have to pay out-of-pocket; nonetheless, an exemption policy exists to support those who are not able to pay the fee.

*"The referral system is required according to the letter from the Deputy Minister in June. Previously, it was not strict since we were afraid of complaints as it is the government populist policy."*

(Health manager)

*"Referral to university hospital is more problematic. The hospital has a policy to refer cases to only MOPH hospitals since university hospitals charge a higher fee."*

(Physicians)

#### Responding to capitation payment for preventive and promotive services

Including prevention and promotion services in the capitation was intended to encourage providers to provide more cost-effective services.

*"Performance might not be changed, but it is made clear how much money you have to provide these activities. It may increase awareness among health workers in these activities..."*

(District Health Officers)

However, in practice, this did not happen in the short term, especially when there was more burden of work for curative care. Information gathered from the survey revealed that only 30% of older people received a health check or home visit in the previous year.

*"There is limited time available to provide out-reach services since there are more patients, especially on the day that the doctor and nurses from the hospital come to provide services."*

(Health workers in PCU)

#### Improvement in information system

What has been striking and generally seen by health administrators and providers was the improvement in the information system, both the beneficiaries database and hospital information. This was due mainly to financial incentives.

*"The information system is complete and much better than the previous situation because it is directly related to the budget received."*

(Hospital director)

#### **5.3.2.4 Implications for the elderly**

Improvement and better availability of services at health centres were noticed by the rural elderly. Services are available in the evening and weekend; in addition, more qualified nurses and ambulance service are available in some PCUs. Therefore, improvement in access to and quality of primary care services and reduction of financial burden caused by other items were likely for elderly residing in rural areas.

*"More available budget makes us able to provide out-of-working hour services which eases access and reduces transportation costs of patients. Previously, people had to hire a car to bring them to hospital when they were in need during the evening or weekend, but now they can get care here... more available budget also brought about more availability of drugs and equipment."*

(Health workers)

*"Currently, there are nurses providing care at the health centre and services are available in the evening and weekend."*

(Rural elderly aged 70 and above)

*"The current health workers are very active, services are available at evening and weekend, and an ambulance service is also available to refer you to the hospital."*

(Rural elderly group aged below 70)

Whether the under-payment for inpatient care to the provincial hospital had some negative consequences on admissions and quality of care is unknown as the study did not collect clinical data. However, no comment on this matter was made by the elderly in the focus group discussions. For preventive and promotive care, evidence from the household survey revealed that low performance had been achieved. Information gathered from the discussion with health managers responsible for non-communicable disease and elderly health revealed that the performance of preventive and promotive services for the elderly was not improved compared with the situation before the UC scheme.

*"The coverage of elderly health activities, i.e. annual health check, screening for diabetes and hypertension, was only 50-60% of the target; it was the same as before the UC."*

(Health managers)

### **5.3.3 Service Delivery System: Establishment of PCU**

The policy aims to shift the service delivery system from technology-based hospital care to a comprehensive and holistic approach of primary care. Primary care has been chosen as a key mechanism for providing health care under the UC scheme for two main reasons (Jongudoumsuk, 2002). Firstly, it is claimed to be a better setting for providing quality care based on a holistic approach. Secondly, it is expected that a system with a primary care gatekeeper will lower overall health care costs and improve the efficiency of resources used.

All public hospitals were required to set up at least two PCUs in the first year, one in the tambol where the hospital was located and another one in another tambol within the district. PCUs within hospital tambols were set up in hospital as a separate unit by most hospitals, but the provincial hospital and Kud Chun hospital set up a PCU in the town centre, outside the hospital. Most district hospitals employed professional nurses to provide care in PCUs while specialists were employed by the provincial hospital.

Health centres were selected and upgraded to PCUs in non-hospital tambols. Three main variations of service provision were identified in PCUs outside the hospital tambol. A half-day outreach team composed of a specialist and nurses during the working day was adopted by the provincial hospital. Rotating nurses to provide care in PCUs on working days, with supervision by a doctor once a week, was adopted by some district hospitals. Some PCUs had full-time nurses providing care. In parallel with the establishment of PCUs, all hospitals referred uncomplicated chronic cases such as diabetes and hypertension to PCUs and health centres.

#### **5.3.3.1 Attitude towards the policy**

In general, all groups agreed that the concept of providing comprehensive, holistic, and continuous care for people near their home was good.

*"The concept is good, expanding good quality of care to people near their home by allocating doctors and nurses to work there."*

(Health administrator)

*"It is good in terms of improving capability and quality of service at primary care, holistic care, supporting health centre, and reducing congestion of patients in hospital."*

(Health manager)

*"It should have been done before if we had the knowledge and skill."*

(A district hospital director)

However, physicians in the provincial hospital opposed it because they had to rotate to provide care in the PCU, which increased the burden of work on them.

*"The workload is terrible in PCU; there are more than one hundred patients in half a day so it is not possible to provide comprehensive and holistic care as expected. The weather is also hot and there is no air conditioning."*

(Physicians)

Among urban elderly groups, they recognized that services at PCU are more accessible and convenient compared with services in the provincial hospital, while improvements in the availability of services in health centres were seen by rural elderly groups.

*"Getting services at the PCU is more convenient than getting them from the hospital; the PCU is close and the queue is shorter."*

(Urban elderly group aged 70 and above)

*"It is a one stop service so it is convenient for me with a problem with my leg."*

(Urban elderly group aged below 70)

*"There is at least one thing different from the past in this health centre; there are nurses providing care here and we can get care any time when needed."*

(Rural elderly group aged 70 and above)

### 5.3.3.2 Policy implementation and constraints

#### Insufficient and lack of appropriate staff

The main constraint in policy implementation was insufficient doctors and lack of appropriate skilled health personnel to run services in PCUs. There were insufficient physicians, dentists, or pharmacists in community hospitals while physicians in the provincial hospital were mainly specialists.

*"There are insufficient doctors to do so... it may be better if there are sufficient staff and employing a nurse instead of a doctor to provide care there."*

(Health administrator)

*"Currently, it is already difficult to keep doctors working in district hospitals. It is not feasible to allocate doctors to work in a health centre."*

(Hospital manager)

*"The standard set by the MOPH that requires a doctor to work in a PCU is unrealistic."*

(District Health Officer)

#### Unclear policy direction and poor preparation

The rush for policy implementation without good preparation and strategic planning left providers confused and unclear about the policy direction, and resulted in misconceptions.

*"There was not enough time to prepare so in practice it does not work well."*

(Health administrator)

*"It does not work well because of poor preparation for the concept of family medicine. It was set without good preparation or plan."*

(Hospital manager)

*"The direction is not clear; employing a doctor in PCUs may not be possible since there is a scarcity of doctors in district hospitals at the moment."*

(Hospital manager)

*"What currently done is an extended OPD, not PCU as in the concept. Specialists rotate to work in PCU and work as a general practitioner in PCU, it is useless... "*

(Physicians)

### 5.3.3.3 Impacts on providers and their responses

#### Provincial hospital

As a result of the MOPH guideline that requires permanent doctors to work in PCUs, the provincial hospital director has to allocate specialists to work in PCUs since nearly all the doctors in the hospital are specialists. Increased workload and dissatisfaction with working conditions were major complaints among them. The workload in PCUs was much higher than that in the provincial hospital and there was less convenience in working in PCUs.

*"We have to provide care to 120 patients within 3 hours in the PCU so don't expect how much we can do for them. The weather is hot and there is no air conditioning."*

(Physicians)

PCU work meant specialists could perform less in the hospital and this could cause the quality of care provided in the provincial hospital to deteriorate.

*"We can perform less in the hospital since we work outside."*

(Physicians)

*"Currently, we work in PCU and let internists provide care in the hospital. So patients who need a specialist do not get it."*

(Physicians)

#### District hospital

No complaints were made among those in district hospitals since all of them employed professional nurses to provide regular care in PCUs. All of the hospital staff providing care in a PCU enrolled to do so and received a per diem.

#### Health centre

Having a part-time physician or full-time nurses in a health centre improves capability in service provision and quality of care at health centre.



*"Standard of care was problematic in the past; we seldom did sterilization since there were only two health workers at that time. Currently there are more health workers and nurses from the hospital came to advise on quality of care so we do it every day now."*

(Health worker)

*"There are more items of drugs and equipment supplied from the hospital."*

(Health worker)

*"We are better trained and more capable in providing care than midwives or sanitarians, especially for curative care then we can do better than them."*

(Nurses in PCU)

Being a PCU brought about better coordination, relationship, and support between hospital and health centre, resulting in better service management even though some problems remained.

*"Previously, we did not know each other, but we have to solve problem together now so we know each other, know the problems, and we can help each other."*

(Hospital manager)

*"Being a network enables better coordination and service provision, but it requires effective management of the network."*

(District health officer)

*"Service management and technical support have been developed, there is more communication between health workers, nurses, and doctors then the relationships are better."*

(Health workers)

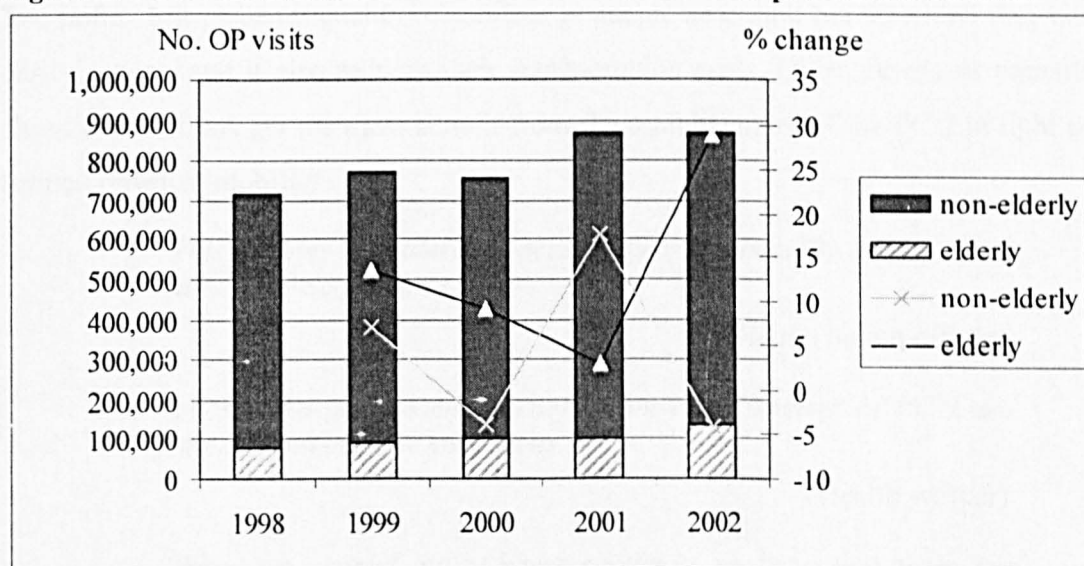
An increase in workload for curative care in PCU and health centre was apparent due to an increase in demand for curative care and referred chronic cases from hospital.

*"Chronic cases such as diabetes and hypertension cases were referred from the hospital to get care at PCU."*

(Health worker)

Figure 5.4 shows service utilization in health centres in Yasothon during 1998–2002. The columns represent the number of outpatient visits and the lines represent the percentage change in outpatient visits by the elderly and non-elderly. There was a sharp increase in service utilization in health centres in 2001, 16%, and the increase was solely due to an increase in service use among the non-elderly. The increase in service utilization in health centres among the elderly was negligible during 1999–2001, but it increased sharply in 2002.

**Figure 5. 4 Service utilization in health centres, Yasothon province 1998-2002**



Source: Service utilization reports, Yasothon province 1998-2002

Some negative implications for health centres from becoming a PCU were identified. The increase in workload for curative care limited time available for them to perform outreach prevention and promotion activities.

*"Workload is increased so there is less available time to provide outreach prevention and promotion activities."*

(Nurse in PCU)

*"There are more patients, then there is less available time for outreach prevention and promotion activities."*

(Health worker in PCU)

In addition, the adoption of a hospital service delivery system may cause the break down of a comprehensive and integrated service previously provided in health centre.

*“There are more steps of service provision such as registration, screening, consulting doctor, investigation, and getting drug, instead of the previous one-stop service; this breaks down the close relationship between health worker and patients.”*

(Health worker in PCU)

#### **5.3.3.4 Implications for the elderly**

The policy brings better quality of services to people near their home, which they can then easily access, and it also reduces their transportation costs. Older people or patients with chronic conditions get the most benefit from the establishment of the PCU in light of their limited physical mobility.

*“This enables the elderly in access to care, especially among those with chronic conditions..”*

(District health officer)

*“Those who get the most benefit from establishment of PCU are patients with chronic conditions.”*

(Health worker)

*“When we opened out-of-hours service, I realized that there are many people needing emergency care; this also reduces their transportation costs in getting care out-of-hours at hospital.”*

(Health worker)

## **5.4 Discussion**

### **Summary of findings**

Important findings are summarized in Table 5.3 below. In general, most stakeholders accepted the policy and reform initiatives. Opposition among specialists was mainly due to them having to provide care in PCUs. Implementing the policy was problematic due to the rush for policy implementation and poor preparation of the system. Being a government populist policy and extensive advertisements made providers more responsive to social expectations. Registration of beneficiaries was perfect, nearly 100%, due to the populist

**Table 5. 3 Summary of findings**

Aspect of analysis	Policy components		
	1. Universal coverage for the elderly	2. Budget allocation and payment methods	3. Establishment PCU
1. Attitude	<ul style="list-style-type: none"> <li>• Generally accepted by providers</li> <li>• There was no consensus among the elderly</li> </ul>	<ul style="list-style-type: none"> <li>• Generally agreed with the allocation criterion and payment methods</li> <li>• The remaining problem was the low inpatient budget</li> </ul>	<ul style="list-style-type: none"> <li>• The concept was generally accepted</li> <li>• Employing specialists to provide care in PCU led to opposition among them.</li> </ul>
2. Policy implementation and constraints	<ul style="list-style-type: none"> <li>• Popular policy</li> <li>• Active registration</li> <li>• Information, education and communication</li> </ul>	<ul style="list-style-type: none"> <li>• Unclear role, functions, and limited capacity to perform active purchasing role</li> <li>• Mismatch of resources</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient and lack of appropriate qualified staff</li> <li>• Rushed implementation and poor preparation</li> </ul>
3. Impacts on providers and their responses	<ul style="list-style-type: none"> <li>• Increased overall workload at all levels</li> <li>• Greater responsiveness and accelerated quality improvement programme</li> </ul>	<ul style="list-style-type: none"> <li>• Health centre gained the most resulting in improvement of availability of services, drugs, and qualified staff</li> <li>• More cost consciousness among hospitals and some cost saving measures were adopted</li> <li>• Low payment for inpatients might provide less incentives in service provision in the provincial hospital</li> </ul>	<ul style="list-style-type: none"> <li>• Increased workload and dissatisfaction among specialists</li> <li>• Improved availability of services, drugs, and qualified staff at health centres</li> <li>• Increased workload for curative care and less available time for P&amp;P</li> </ul>
4. Implications for the elderly	<ul style="list-style-type: none"> <li>• Reduced financial barriers</li> <li>• Greater satisfaction</li> <li>• Informal payment</li> </ul>	<ul style="list-style-type: none"> <li>• Improved access and quality of primary care services for rural elderly</li> <li>• Quality of care implications at hospital level unclear</li> <li>• Low coverage of P&amp;P</li> </ul>	<ul style="list-style-type: none"> <li>• Better quality of services at health centre</li> <li>• Improved physical access and reduced transportation costs esp. for rural elderly</li> </ul>

policy status and financial incentives. An increase in workloads for curative care was apparent. Health centres gained the most because of the payment method adopted and strengthening primary care policy, resulting in improvement of availability of services, drugs, and qualified staff at peripheral level. The provincial hospital was the loser due to the payment adopted and the relatively high cost of care provided by the hospital. Some cost saving measures were adopted by all hospitals. Admissions in district hospitals were increased in contrast to those in the provincial hospital.

Providing universal coverage and establishment of PCUs had positive implications for access and quality of care for the elderly, particularly at primary level. Providing universal coverage reduced financial barriers, especially for those previously uninsured. A higher budget in health centres and establishment of PCUs improved the availability and quality of services at peripheral level, increased physical access, and reduced transportation costs for rural elderly. It was not clear whether the payment methods adopted for curative care had negative consequences for the elderly at hospital level. Low coverage of preventive and promotive services was observed. Imperfect protection as illustrated by informal payments for artificial lens for IOL operation was reported by the elderly.

### **Discussion of findings**

Findings relating to all policy components are discussed together in terms of attitude towards the scheme, policy implementation and constraints, impacts on providers and their responses, and implications for the elderly in terms of access, quality of care, and financial protection.

How did people view the UC scheme?

Comparing the three main policy components, providing universal health insurance for all elderly was the most acceptable policy among providers, followed by budget allocation and provider payment and establishment of primary care units. However, the latter was the most apparent improvement seen by elderly beneficiaries.

Providing universal coverage for the elderly: The relatively high health need among the elderly in contrast to their lower ability to pay led to the scheme being generally accepted by all health administrators, managers, and providers. However, the reasons supporting the

policy varied between them. The concept of entitlement as stated in the current constitution was emphasized by few of them, mainly health administrators, managers, and those in district hospitals. Repaying the elderly was a reason stated by some providers; repaying parents or older people is embedded in the culture of most Asian countries including Thailand. The welfare concept was emphasised more by those in the provincial hospital, and most in the provincial hospital did not agree with providing coverage to all other groups. Scarcity of budget and the substantial role of user fees in financing provincial hospitals before the UC policy (Srithamrongsawat et al., 2000) could explain their disagreement<sup>45</sup>.

There was no consensus among the elderly on this issue. Most of them emphasized the welfare concept. This might be due to bias in recruiting participants to join focus group discussions since the poor were more likely to cooperate than the better off. For those who agreed with provision to all elderly, repaying the elderly was the main reason raised in addition to the lower availability of cash among older people. None of them emphasized that access to health care is a basic right of people.

Performance-based budget allocation and payment methods: All providers agreed with the per capita budget allocation since the province was the gainer in light of the low number of staff in relation to its population. Including salary in the per capita budget was also generally accepted by most of them by the same reason, and because it might enable more equitable distribution of health personnel. All providers also accepted the exclusive model adopted by the province as they had been familiar with it for many years before the UC policy; however, the low budget for inpatient care was criticized by those in the provincial hospital.

Establishment of PCUs: The concept of family medicine and establishment of primary care units was generally accepted by administrators, managers, and providers. Elderly beneficiaries also appreciated having good quality of services near to their homes. Similar to other provinces (Srithamrongsawat and Lapying, 2002; HSRI, 2003), the only opposition

---

<sup>45</sup> Revenues from user fees accounted for, on average, 30% of total expenditures in provincial hospitals before the UC policy.

came from specialists in the provincial hospital, since they had to rotate to provide care in PCUs.

### Main constraints on policy implementation

Constraints on policy implementation were inevitable due to rapid implementation and poor preparation. The ‘do and correct’ style was adopted by the MOPH in the implementation. The gain in overall budget might have resulted in fewer problems in implementation in this province, although some problems remained due to the low per capita budget for inpatient care and small size of population in one district. However, all these financial problems could be resolved by the province. The main constraints to the implementation included lack of management capabilities and insufficient appropriate health personnel to provide care in PCUs.

Management capabilities at provincial level: Unclear role and function, and limited management capabilities, were the main problems of the PHO in implementing the policy, particularly for insurance benefit management and purchasing health care. The shift from direct control of the budget and top-down policy to purchasing care made many health managers confused about their roles, in addition to the lack of necessary skills to perform active purchasing such as monitoring and regulating. The structural organization and limited management capabilities led to weak insurance management and purchasing power of the PHO. Monitoring and regulating capacities to ensure good value for money, accessibility, and quality of care were less developed. At the time of study, the province had already developed some indicators to monitor providers; however, this was not fully implemented. No separation of the purchasing and providing roles of the MOPH might limit the accountability of the system; however, there was at least one advantage during the transition period, the MOPH and PHO could directly require MOPH hospitals to follow the policy and guidelines. The existence of informal payments for artificial lens suggested that there was inadequate information provided to beneficiaries and weak consumer protection.

Insufficient appropriate health personnel: The lack of appropriate personnel to provide care in PCUs was the main constraint in implementing PCUs to meet the standard set by the MOPH. Considering the current number of health personnel in Yasothon and many other provinces, it was not feasible to meet the standard set by the MOPH. Employing specialists

to provide care in PCUs led to opposition amongst them; in addition, it was not an efficient use of resources. The unclear policy direction for PCUs was another matter; no strategic plan was made by the MOPH. Allocating professional nurses to work as full time staff in PCUs is more realistic and would improve quality of care at health centres. Without explicit MOPH policy on human resource distribution, it is difficult for the province to obtain more doctors and other medical staff since the MOPH is the major employer.

### Impacts on providers and their responses

**Increase in workloads:** Providing health insurance reduces financial barriers to access, while the establishment of PCUs increases physical access, especially among the rural elderly. These resulted in increases in demand for ambulatory care and in workloads. The increase in ambulatory visits in the first year of UC implementation could be explained by both influences. An increase in demand for care attributable to having insurance better explains the increase of service use among the non-elderly since a substantial proportion of them were uninsured before the UC policy, as illustrated by the sharp increase in service utilization among them in the first year (Figure 5.1). An increase in ambulatory visits among the elderly was apparent; there had been a progressively increasing trend in ambulatory visits during 1999 - 2002. The increase in ambulatory visits of the elderly during 1999-2001 is explained by the expansion of insurance coverage by the MWS (1990-2000) and the UC (2001). However, the increase in physical access due to the establishment of PCUs better explains the increase in the second year of its implementation (2002).

**Greater provider responsiveness:** The per capita budget provided enormous incentives for health workers to register all eligible people. Extensive policy advertisements through mass media also improved both the scheme's prestige and providers' acceptance of the card, reflected in the greater responsiveness of providers in providing services. Being a high priority policy, in addition to the extensive advertising, made providers more responsive to patient demand and expectations, in order to increase patient satisfaction and prevent complaints.

**Impacts on the provincial hospital and its responses:** Capitation payment for ambulatory care is generally fine because of the high per capita budget. However, it gave more benefit to district hospitals than to the provincial hospital due to the low unit cost of care of district



hospitals. The provincial hospital was further constrained financially by the low payments for inpatient care, due to the low per capita budget for inpatient care. The per capita budget for inpatient care was criticized as too low and under-estimated (Pannarunothai et al., 2001), since it was calculated by employing the 1996 admission rate without taking into account changes in demand due to demographic and technological changes. Moreover, inpatient care accounts for the majority of costs in provincial hospitals (Tisayaticom and Tonimitr, 2001)<sup>46</sup>. Improving management on pharmaceutical supplies and medical equipment was the main cost saving strategy adopted by the hospital; however, it was not clear whether there were any negative implications on the quality of care provided by the hospital. It might have been the case that the provincial hospital was less keen to admit expensive patients such as the elderly, but this could not be established by this study. Providers did not suggest that this was the case; while they may have been unlikely to admit to such an effect, the elderly themselves did not identify this as a problem. Employing specialists to provide primary care in PCUs while letting internists provide care in the hospital raises questions of efficiency of resource use and implications for the quality of care provided by the hospital; again no evidence was obtained on the latter.

Impacts on district hospitals and their responses: Most district hospitals gained in budget; nevertheless, they had to adopt some cost saving measures due to a substantial increase in per diem, overtime payments, and workload payment rates. Managing overtime payments and limiting drug dispensing by nurses were two common strategies adopted by most community hospitals. A striking strategy adopted by one hospital was an explicit policy on limiting referral; an extremely high increase in admissions was also observed in this hospital. It was not clear whether these strategies had any negative implications on access and quality of care for the elderly in this hospital. Unnecessary admission may not have serious negative implications on the elderly, but it increases not only hospital costs but also patient costs and results in inefficiency of the system.

Impacts on health centres and their responses: Health centres gained the most from the payment adopted and establishment of PCUs. A larger budget made it feasible for them to

---

<sup>46</sup> Inpatient care accounts for, on average, 38% and 65% of total hospital recurrent costs for district hospital and provincial hospital respectively.

extend service hours to evenings and weekends; moreover, being a PCU improved overall service capability and the quality of services provided by them. However, an increase in workload for curative care means there is less available time to provide active prevention and promotion activities.

Improvement in quality of care at peripheral level was observed only in terms of improvement in availability of qualified staff, drugs, and equipment, provision of services such as prompt treatment, and provider's manner. Improvement in capacity and quality of care specific to the needs of older people according to the UC policy, i.e. geriatric care, was not observed. Moreover, geriatric care in hospital is, even now, little developed and a geriatric clinic has been set up in only a few hospitals. Expanding insurance coverage to cover all those previously uninsured, mainly the non-elderly, increased workloads for curative care, particularly for the newly insured, so it was probably less likely that hospitals would be able to improve their capability and quality of care provided specifically to the elderly without well thought out preparation and a plan. No evidence was gathered that suggested that facilities had thought much about care for the elderly.

Yasothon and most provinces in the Northeast gained more budget from the per capita budget allocation while some provinces and hospitals in other regions lost them<sup>47</sup>. Fortunately, a contingency fund was set at the MOPH, and most hospitals had reserve funds from revenue collected from user charges and insurance schemes<sup>48</sup>. Hospitals with enough reserve revenue and a considerable number of SSS and CSMBS beneficiaries did not have financial difficulties. Different impacts and responses of providers might have been observed in provinces and hospitals that lost income. They might have had to tightly control budgets, and this might have had some negative implications on access and quality of care for both the elderly and the non-elderly.

Implications for access and quality of care for the elderly

---

<sup>47</sup> Only 3% of hospitals in the Northeast required financial support from the contingency fund while 26, 31, and 37% of hospitals in the Central, North, and South regions respectively did in 2002.

<sup>48</sup> All revenues collected by health facilities are retained at individual facilities.

Providing universal coverage increased demand for care and service utilization, particularly among the previously uninsured, the non-elderly. Whether this crowded out service utilization of older people is of concern. Increase in services used by the non-elderly inevitably created a longer queue, particularly in hospitals; this might be problematic for older people in getting access to care and might encourage them to opt out of the UC scheme. However, evidence from service utilization reports suggests that this did not occur to a marked degree; there was a continuous increase in service utilization among older people (Figure 5.1). The only change observed amongst them was an apparent shift of outpatient visits to health centres in 2002. The elderly also did not comment on this crowding out effect in the focus group discussions. The flat rate capitation employed to pay for outpatient care may have been more likely than universal coverage per se to encourage crowding out; however, it seemed that utilization reports did not support this and the capitation rate for outpatient care was less problematic compared with that of inpatient care. The low payment for inpatient care to the provincial hospital might have provided less incentive for them to provide care, and this would have affected not only the elderly but also the non elderly covered by the UC scheme. With respect to the DRG weights, although they have been criticised, the hospital could be directly reimbursed, from the reinsurance fund, for high cost care that met the MOPH criteria i.e. inpatient care with DRG weight 3 or over. Provider bias in service provision is more likely to have occurred between insurance schemes because of their different payment methods and level of payment (HSRI, 2000).

In summary, providing universal health coverage reduced financial barriers to access, while a larger budget for health centres and establishment of PCUs increased physical access and quality of care at primary level. Providing universal health coverage benefits all Thai elderly, while more available budget at health centres and establishment of PCUs benefits most those in rural areas, especially the elderly, the poor, and those with chronic conditions. Ineffective protection of the scheme, as illustrated by the informal payments for artificial lens, might result in financial difficulties for the poor or unmet need among them. The hospital payment method at provincial level might have discouraged admissions of elderly patients, but the study could not establish whether this was the case or not.

### **Methodological concerns**

The researcher's status as an officer in the Health Insurance Office, MOPH, might have had some implications for information gathered, particularly from health administrators, managers, and health workers. However, as a technical advisor, not an administrator, the researcher could openly share information with the interviewees on both pros and cons of all aspects of policy. Information provided to health workers relating to the objectives of the study, confidentiality of personal information, and analysis of data as a group, might have encouraged them to share information openly. The reason why they did not promote the use of call centres provided by health administrator and managers suggests that they were frank with the researcher. Even though this problem might remain to some degree, health administrator and managers were frank to inform the reason that made them not promote the use of call centres; this suggests that they were frank with the researcher. However, amongst physicians in the provincial hospital, strong opposition to provide care in PCUs might lead them over claim the problem of implementing this policy. They were also unlikely to inform the matter of under provision of services to the elderly according to the low payment if it existed; information bias in this case was less likely due to the position of the researcher. Nevertheless, consistency with information from different groups or sources can be cross-checked.

The selection of older focus group discussion participants by health workers is another possible bias. However, providing criteria for selection such as area of residence (urban, rural with PCU, remote area without PCU), age below or above 70 years, previous insurance status (uninsured, holding the elderly card, holding the health card), might have reduced this potential bias. Over representation of poor elderly in the focus group discussions might be another issue of concern: the poor are generally more likely to cooperate in providing information than the rich. However, they are the target group of concern for various policy matters; moreover, in-depth understanding of issues relating to the UC scheme among older people was the primary objective of the method employed, not quantitative and representative data across all socio-economic groups.

A large number of informants with different positions, i.e. health administrators, managers, providers, and beneficiaries, were included, making it possible for the study to cross-check

information for validity and reliability (triangulation). In addition, consistency with information gathered from other sources, such as the household survey and reports, increases confidence in the reliability and validity of information gathered from this study.

### **Relevance elsewhere**

This study provides an in-depth understanding of UC policy implementation, provider responses and implications for access to and quality of care for the elderly in a province where there was shortage of physicians, but not budget. Therefore, results from this study may be limited in terms of generalisability in some aspects, i.e. financial impact on providers and its implications. However, the study is likely to be of relevance for most northeast provinces of Thailand due to similar contexts, i.e. low socioeconomic status and low number of staff in relation to population. The rush for policy implementation, in addition to confusion with various reform initiatives, inevitably resulted in similar problems and constraints in policy implementation in all provinces i.e. lack of management capability and lack of appropriate personnel. Yasothon might be in a better position compared with other provinces in terms of more experience of reform and more readiness of the system to handle the policy. Fewer complaints were made about beneficiary registration and the information system in this study compared with other studies (Srithamrongsawat and Lapying, 2002<sup>49</sup>; HSRI, 2002<sup>50</sup>). This might be due to the readiness of the system before the UC or because these problems were past at the time of the interviews (August 2002).

The greater positive impacts of the policy on health centres due to the payment method and establishment of PCUs are likely to be similar in all provinces but may vary by degree. This is because there is less difference in the distribution of health centres between provinces and regions compared with other type of resources. Greater impacts on hospitals, especially the provincial hospital, are likely to be observed in provinces that received a smaller budget than in the past, according to the new allocation criterion.

---

<sup>49</sup> This study was conducted during November 2001 – January 2002 in four provinces implementing the policy in April and June 2001.

<sup>50</sup> This study was conducted in December 2001 in another 8 provinces implementing the policy in April and June 2001.

## **5.5 Conclusion**

In general, most stakeholders had a good attitude towards the policy and this resulted in relative success in its implementation. The main problems and constraints in policy implementation were due to the rush for implementation and the lack of staff, mainly physicians. The first problem will be resolved when the system is well developed while the latter needs an explicit MOPH policy on development and redeployment of human resources.

The lack of separation of purchasing and providing roles may limit the purchasing function and accountability of the system: however, it has at least one benefit in that the MOPH and PHO can compel providers to comply with the policy, especially when the purchasing institution is still weak. Weakness in monitoring and regulating roles led to incomplete protection of the insured, as shown by the informal payments. Implications of the payment methods on access to and quality of care for the elderly, particularly in inpatient care, were not monitored and are unknown. In order to improve the insurance function, monitoring and regulating capabilities of PHO should be strengthened.

Gaining more budget may play some role in the success of UC implementation and having fewer problems in this province. However, according to the per capita budget for different services and the payment method adopted, there were different financial impacts on different health facilities. Health centres gained the most while the provincial hospital saw its budget reduced. The gain in budget for health centres meant they could extend service hours and improve quality of care. A shifting of inpatient cases from the provincial hospital to district hospitals was apparent, likely to be a result of the financial incentives provided by the payment to district hospitals. The relatively high cost of inpatient services at the provincial hospital, in contrast to the low payments, resulted in financial constraints for the hospital. This may lead to a reduction in the quality of hospital care and increases the risk of discrimination against admitting more expensive cases, both elderly and non elderly, so readjustment of the per capita budget at either the national or the provincial levels should be considered in order to sustain the policy and maintain overall quality of care. In addition, readjustment of the weights of some DRG groups which do not represent cost of services provided is also needed.

Considering the current physician profile, it is unlikely to meet the PCU standard set by the MOPH. Allocating professional nurses to work as full-time staff in PCU is more feasible and can improve overall quality of care at health centres. However, reorientation of the educational curriculum to train nurses to work in PCUs should be considered since the current curriculum emphasises hospital care rather than community or family care. In addition, a training programme on family medicine should be emphasized and a clear policy direction and plan should be made by the MOPH.

For policy implications on access to and quality of care for the elderly, it was not clear whether expanding health insurance to all provided a greater benefit to the urban elderly or their rural counterparts, due to lack of evidence on the situation prior to the UC scheme in the study province. However, establishment of PCUs and a larger available budget improved the quality and availability of services provided by health centres; this is an obvious benefit for rural people, the poor, and older people since they are regular customers of health centres.

---

## CHAPTER 6: SERVICE UTILIZATION

### 6.1 Introduction

Previous evidence from national surveys revealed that elderly residing in urban areas and the rich had lower insurance coverage than those residing in rural areas and the poor. In spite of the relatively low insurance coverage, the rich and urban elderly used more services than the poor and those residing in rural areas. Greater physical access and ability to pay among the former best explained their frequent use of services. Expanding health insurance to all would provide benefit to those previously uninsured, while improving quality and availability of services in rural health centres through the strengthening primary care policy of the UC scheme would ease access to care for rural elderly. So it is not clear whether the UC scheme would bring about equitable access for the elderly.

This chapter aims to assess service utilization and take-up of UC benefit by area of residence and socioeconomic status; whether there was equal access measured in terms of service utilization for the elderly. The framework of the Andersen Behaviour model was employed; service utilization should be explained mainly by need factors and it should not be different by area of residence or economic status in an equitable situation. A brief methodology is provided in the next section followed by results of the study. Results from the univariate analyses of service utilization by various factors are presented first, followed by results from the multivariate analyses. Discussion of the findings and conclusions are presented subsequently at the end.

### 6.2 Methodology

The concept of horizontal equity, equality of access for equal need, was employed in order to assess whether elderly covered by the UC scheme had equal access. The three classes of variables determining service utilization derived from the Andersen Behaviour model (Andersen, 1995) - predisposing, enabling, and need variables - were employed as independent variables in the analysis. Predisposing variables (personal attributes that may predispose an individual to seek care) included in the analyses were age group (1 age 70 and above, 0 aged below 70), sex (1 male, 0 female), marital status (1 currently married and



currently unmarried<sup>51</sup>), and educational level<sup>52</sup> (1 having primary education or above, 0 having less than primary education or none). Two age groups, the young old and the oldest old, were employed instead of the actual age in order to control for health need between the young old and the oldest old, rather than to predict or test the difference<sup>53</sup>. Marital status was grouped as currently married or unmarried according to its expected effect on health care utilization and to get large enough samples for each category.

Enabling factors included in the analysis were area of residence (1 urban, 0 rural), self-perceived convenient access (1 convenient, 0 inconvenient), and economic status (per capita income quintiles). Area of residence and self-reported convenient access were chosen to represent physical access. Self-reported convenient access to services at the registered hospital was included since no choice was provided and some respondents reported inconvenient access.

Household economic status is an important determinant of health and enabling use of health services (Andersen, 1995). A monetary indicator was preferred to an index, e.g. wealth index, because the study aimed to quantify burden of expenditure and magnitude of catastrophic expenditure. Even though assets can be translated into monetary values, the calculation is complicated and since only selected items of assets and durable goods were collected<sup>54</sup>, this approach was not chosen. Self-assessed household economic status<sup>55</sup> was another indicator collected in the survey, but it was not chosen for the same reason. Moreover, it is likely to vary by mood, individual's expectation, personal traits, and previous experiences of financial strain (Ravallion and Lokshin, 2000). Even though non-

---

<sup>51</sup> Currently unmarried respondents included those who were single, widowed, divorced, or separated.

<sup>52</sup> Those with primary education was grouped with those with secondary education or above due to the small number of respondents with secondary education or above (only 1.7% of respondents)

<sup>53</sup> Age and age<sup>2</sup> measured as continuous variables were not significant in the preliminary analyses of regression models.

<sup>54</sup> The study tried to construct a wealth index by employing a statistical technique, Principal Component Analysis (PCA); however, the explanatory power of the first component was only 25% so it was not pursued.

<sup>55</sup> Respondents were asked to self-assess their household economic status into 4 groups: results were: much hardship (7%), some hardship (29%), no hardship in daily living but has some for unexpected events (33%), and no problem at all (31%).

monetary indicators were not employed in the analyses, they were used to check consistency of data and results from the monetary indicators.

Only cash income and expenditure data were collected, and per capita cash income was chosen to represent the economic status of the individual, for various reasons. First, the study aimed to measure cash available to pay medical bills and related expenditures. Second, monthly cash income from various sources was collected while only an aggregated monthly expenditure was collected, so the former was probably more accurate. Third, verification of income and expenditure data with household assets revealed that neither of them was superior as an indicator of economic status. A literature review of measurement of household economic status and comparison of income and expenditure data are presented in Appendix 5. The per capita income was classified into 5 income quintiles of the total population. Quintile 1 was the poorest group and was employed as a comparison group.

For need factors, self-reported presence of chronic conditions with or without disabilities was employed as the indicator of health need required for assessing equal utilization for equal need. A checklist of chronic conditions was provided and additional self-reported conditions requiring more than six months of care could be added. If the chronic conditions caused difficulties in performing daily activities, they would be defined as chronic disabling conditions. Two dichotomous variables relating to chronic conditions were included, presence of chronic conditions without disabilities (Chr1; 1 yes, 0 no) and chronic disabling conditions (Chr2; 1 yes, 0 no).

Self-reported utilization of health facilities was employed as an indicator of service utilization. Use of services included aggregate services obtained from health facilities, private clinics, public hospitals, and private hospitals. Self-prescribing was excluded since it is not covered by the UC scheme. For traditional medicine, although it is covered by the UC scheme, in practice, it is less available in health facilities so it was also excluded. A one-month recall period was employed for ambulatory care in order to capture use of services for not only acute illness but also chronic conditions. A 1-year recall period was employed for hospitalization. The probability of an individual visiting a health facility and the number of ambulatory visits and those visits covered by the UC scheme in the

previous month were employed as indicators to assess equitable access to ambulatory care. Correspondingly, the probability of an individual being admitted and the number of admissions and those admissions covered by the UC scheme were employed as indicators to assess equitable access to inpatient care.

#### Data set and analytical method

Data were obtained from the household health interview survey in Yasothon, which consisted of 965 elderly respondents aged 60 and above. The survey was conducted by employing a two-stage cluster sampling technique. Area of residence was divided into urban and rural, and 24 area blocks or villages were randomly selected from each area proportionate to the number of area blocks or villages in each district. In the second stage, approximately 24 respondents were randomly selected from each block or village. The details of sampling were provided in chapter 4. Respondents were those holding a UC card and without other insurance coverage. All respondents in the survey with complete information on independent variables were included in the analyses. Out of 965 respondents, only 956 respondents had complete income data and were included.

The analysis was done in Stata7 and survey effect and sampling weights were applied in the analyses. The survey commands<sup>56</sup> were used in the analysis. The samples were drawn equally from urban and rural areas in spite of the fact that 80% of the elderly resided in rural areas. Therefore, sample weights were required to make the sample represent the population. The weights are the inverse probability of respondents being chosen in urban and rural areas<sup>57</sup>. Explanatory models were developed and are presented below.

#### *Models and dependent variables for ambulatory visits*

The analyses were divided into two stages, the probability of an individual having any ambulatory visit and the number of visits among those accessing health facilities. Following analysis of frequencies and cross tabulations, two logistic regression models

---

<sup>56</sup> They are special commands in STATA for analyzing survey data. Data from sample surveys generally have three important characteristics: sample weights, clustering sampling, and stratification. All commands for analyzing survey begin with svy.

<sup>57</sup> Sample weights for an individual in an urban area were 24.3 and 89.59 for a rural respondent.

were employed to assess the probability of an individual using health facilities (model 1) and the UC card for ambulatory care (model 2) in the previous month (1 yes, 0 no), and can be written as follows:

$$\ln (p/1-p) = \alpha + X\beta + \varepsilon \quad (\text{Equation 1})$$

where  $p$  represents the probability that a respondent used health facilities or the UC card for ambulatory care in the previous month and  $X$  represents a set of independent variables hypothesized to affect use of health facilities or use of the UC card for ambulatory care of individuals in the previous month. Results from the logistic regression analyses are presented in terms of odds ratio. The odds ratio is the odds<sup>58</sup> of the event occurring for group A, for example residing in urban areas, divided by the odds that it occurs for group B, for example residing in rural areas. The odds ratio of each independent variable refers to the relative effect of the presence of a particular variable on its probability of an outcome occurring. If the odds ratio is more than 1, this means it has a positive effect on the dependent variable and a negative effect if it is less than 1.

For the number of ambulatory visits and visits covered by the UC scheme, a regression model for count data was employed. A negative binomial regression was chosen instead of a Poisson regression due to over-dispersion of the distribution of ambulatory visits<sup>59</sup>. A negative binomial regression for factors explaining the number of visits (model 3) and those visits covered by the UC scheme (model 4) can be written as follows:

$$P(y|\text{visit}>0) = \frac{\Gamma(k^{-1} + y)}{\Gamma(k^{-1}) y!} \left( \frac{k\mu}{1+k\mu} \right)^y \left( \frac{1}{1+k\mu} \right)^{1/k}, y = 1, 2, \dots (\text{Equation 2})$$

---

<sup>58</sup> An odd refers to the probability an event occurs divided by the probability that it doesn't occur. An event that occurs 90% of the time has 9:1 odds of occurring since  $0.9/(1 - 0.9) = 9$ .

<sup>59</sup> An ordinary Poisson regression was employed together with sample weight in the preliminary analyses, but all the chi-square tests for the goodness of fit of the models were significant which indicated that the distributions were against the assumption of Poisson distribution that the mean is equal to the variance does not hold in this data set, and that a negative binomial model was more appropriate.

where  $P(y|visit>0)$  represents the probability of the number of ambulatory visits or visits covered by the UC scheme in the previous month being 1, 2.... among respondents accessing health facilities or those using the UC card in getting ambulatory care.  $\Gamma( )$  is the gamma function,  $\mu = \exp(x\beta)$ ,  $k$  = dispersion parameter, and  $x$  represents a set of explanatory variables hypothesized to affect the number of ambulatory visits or visits covered by the UC scheme.

*Models and dependent variables for hospitalization*

Two logistic regression models were employed to assess the probability of an individual being hospitalized (model 5) and being hospitalized under the UC scheme (model 6) in the previous year (1 yes, 0 no), and can be written as follows:

$$\ln(p/1-p) = \alpha + X\beta + \varepsilon \quad (\text{Equation 3})$$

where  $p$  represents the probability that a respondent was admitted in the previous year or admitted under the UC scheme and  $X$  represents a set of independent variables hypothesized to affect hospitalization or hospitalization covered by the UC scheme.

Two negative binomial regression models were employed to assess factors explaining the number of admissions (model 7) and the number of admissions covered by the UC scheme (model 8) among hospitalized respondents, and can be written as follows:

$$P(y|admit>0) = \frac{\Gamma(k^{-1} + y)}{\Gamma(k^{-1}) y!} \left( \frac{k\mu}{1+k\mu} \right)^y \left( \frac{1}{1+k\mu} \right)^{1/k}, y = 1, 2, \dots \quad (\text{Equation 4})$$

where  $P(y|admit>0)$  represents the probability of the number of admissions or admissions covered by the UC scheme in the previous year being 1, 2... among respondents with hospitalization or hospitalization covered by the UC scheme and other variables are defined as before.

## **6.3 Results**

### **6.3.1 Individual and household characteristics**

In general, most individual characteristics were comparable by area of residence, with the exception of income distribution (Table A6.1 in Appendix 6). Female respondents were prominent and accounted for two-thirds of both urban and rural respondents. The number of elderly aged below 70 was slightly greater than those aged 70 and above in both areas; however, the number of currently unmarried respondents was slightly greater in urban areas and it increased with age (Table A6.2). The majority of respondents had primary education or above, but there was a greater proportion having none or less than primary education among those aged 70 and above. The majority of elderly residing in rural areas were poor; there were greater proportions of rural elderly in quintiles 1 and 2, in contrast to the greater proportions of urban elderly in quintiles 4 and 5. However, no such apparent difference was observed by age group.

Average household size was 4 with no difference by area of residence or age group (Table A6.3 and Table A6.4). Living arrangements were comparable by area of residence and staying alone was uncommon. Living with family increased with age in contrast to living with spouse. Most respondents were householders and one-third of them were breadwinners, but this decreased with age.

One-third of both urban and rural elderly were still working, but this decreased dramatically as their age increased (Table A6.5 and Table A6.6). Seventy percent of them received financial support from their children, on average 1,000 Baht per month. And approximately 10% of them received a 300-Baht monthly welfare allowance; the oldest old was more likely than the young old to receive the allowance (Table A6.6). Mean household monthly income of urban respondents was greater than that of rural respondents; however, household monthly expenditure of urban respondents was also greater than that of rural respondents (Table A6.5). The lower monthly income and expenditure of rural respondents were partly due to the fact that only cash income was collected, as most of them were farmers and had household-owned products for consumption in addition to food from natural resources.

Urban respondents owned more durable goods compared to their rural counterparts (Figure A6.1). However, those residing in rural areas were, probably due to their occupation, more likely than their urban counterparts to own land or an agriculture motor. The size of land owned by rural respondents was also greater than that of urban respondents, 28 Rais compared to 11 Rai<sup>60</sup>.

### **6.3.2 Illness among older people**

#### **6.3.2.1 Presence of chronic condition**

Two-thirds of respondents, on average, had at least one chronic condition. Of these, one-third had no difficulty in performing their daily activities while two-thirds had chronic disabling conditions (Table 6.1). Presence of a chronic condition was slightly greater among those who were female, aged 70 and above, unmarried, in low income groups, and with less than primary education; however, none of these differences were statistically significant (at  $p \leq 0.05$ ). Among those with chronic conditions, one-third had more than one chronic condition. The most common chronic conditions were chronic pain from degenerative transformation of bone and joints.

---

<sup>60</sup> A measurement scale for land in Thailand, 1 Rai equals to 1,600 square meters.

**Table 6. 1 Presence of chronic conditions by socio-demographic status**

	N	Respondents with at least one chronic condition (%)		
		Without disabilities	With disabilities	Total
Total	956	25	44	69
Area of residence				
Urban	453	26	43	69
Rural	503	24	45	69
Sex				
Male	326	25	40	64
Female	630	25	47	71
Age				
60 – 69	508	24	43	67
70 and above	448	26	46	71
Marital status				
Married	478	24	43	67
Unmarried	478	25	46	72
Educational level				
None or < primary	100	32	42	74
Primary or above	856	24	45	69
Income quintile of total population <sup>+</sup>				
1	172	24	50	74
2	154	27	43	70
3	197	31	40	71
4	203	24	43	67
5	230	18	46	64

Note: <sup>+</sup> the number of respondents in each quintile was not equal due to different weights given to urban and rural respondents

### 6.3.2.2 Illness or injury in the previous month

Sixty percent of respondents, on average, had at least one episode of acute illness or injury or use of services in the previous month (Table 6.2). Those elderly with illness had, on average, 1.6 illness episodes in the previous month; average illness rate was 11.5 episodes per person per year. The probability of an individual being ill in the previous month was comparable by area of residence, age, marital status, and educational level. Women, those with chronic conditions, and those in the poorest quintile were more likely to report illness



or injury than men, those without chronic conditions, and those in the upper income quintiles. Among elderly with chronic conditions, those having chronic disabling conditions were more likely to report illness than those without disabilities.

**Table 6. 2 Respondents with illness and illness rates by various factors**

	N	Respondents with illness		Illness rate (episodes/ person/ year)
		%	Episodes in the previous month (N=583)	
Total	956	61	1.6	11.7
Area of residence				
Urban	453	61	1.49	10.9
Rural	503	61	1.63	11.9
Sex				
Male	326	53**	1.67	10.6
Female	630	65**	1.58	12.3
Age				
60 – 69	508	61	1.54	11.2
70 and above	448	61	1.69	12.3
Marital status				
Unmarried	478	62	1.57	11.8
Married	478	60	1.65	11.7
Educational level				
None or < primary	100	60	2.15*	15.3
Primary or above	856	61	1.55*	11.3
Income quintile <i>of total population</i>				
1	172	73*	1.74	15.2
2	154	53*	1.75	11.1
3	197	60*	1.49	10.8
4	203	61*	1.49	10.8
5	230	58*	1.55	10.7
Presence of chronic conditions				
No	296	49**	1.33*	7.7*
Yes	660	67**	1.70*	13.5*
Without disabilities	239	62	1.63	11.9
With disabilities	421	69	1.74	14.5

\* significant at  $P \leq 0.05$

\*\* significant at  $P \leq 0.01$

Difference in the number of illness episodes by various variables was also observed, and was particularly obvious by educational level and presence of chronic conditions. The higher probability of illness and the greater number of illness episodes resulted in the highest illness rates among those who were in the poorest income quintile, had less than primary education, and had chronic disabling conditions. It is worth noting that those without chronic conditions had the lowest illness rate, only half that of those with chronic disabling conditions.

Chronic conditions accounted for approximately half of all illness episodes in the previous month (Table A6.7). The most common conditions reported by respondents were musculoskeletal condition, unspecific condition i.e. dizziness, cardiovascular problems, and metabolic disorders.

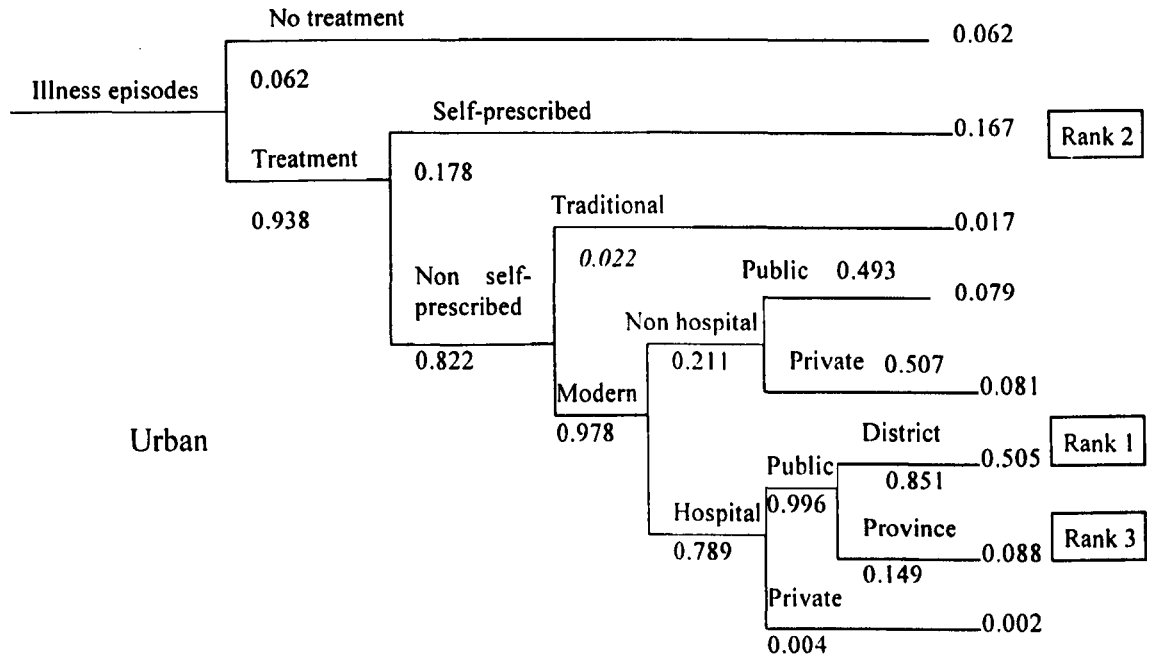
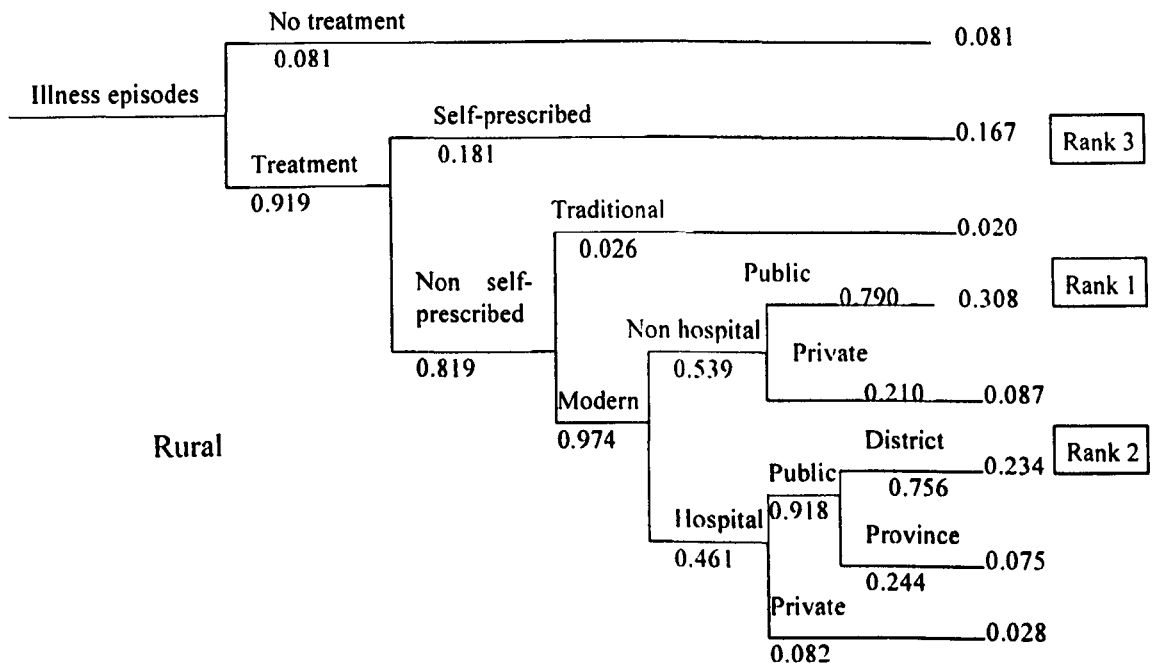
### **6.3.3 Service utilization and take-up of UC benefit**

#### **6.3.3.1 Use of ambulatory care and take-up of UC benefit**

##### *Care seeking behaviour*

In the first year of UC policy implementation, people were simply assigned to their local district hospital. Considering the difference in service settings by area of residence, the patterns of care seeking behaviour were likely to vary by area of residence. Probability pathways of treatment choice by urban and rural respondents are shown in Figure 6.1 and Figure 6.2 respectively.

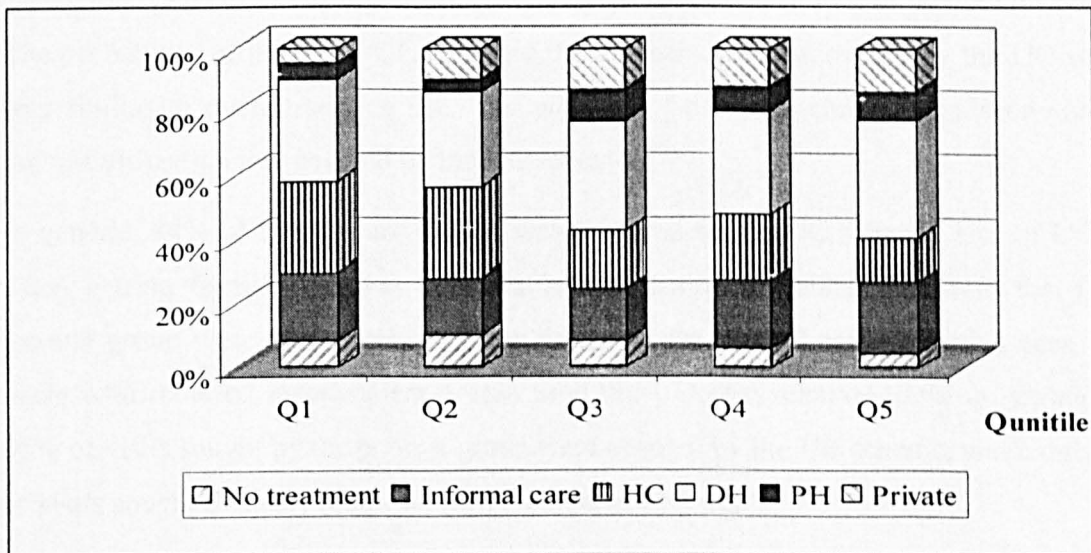
The majority of those who reported illness in the previous month sought at least one treatment action; however, 6 and 8% of illness episodes of urban and rural respondents, respectively, were not sought care. Eighteen percent of illness episodes of either urban or rural respondents were self-prescribing. Self-prescribing was ranked second and third for all actions sought by urban and rural respondents respectively, while use of traditional care was unpopular. Care obtained from health facilities accounted for 80% of all treatment actions. Care obtained from health centres was ranked first among rural respondents, while care obtained from district hospitals was ranked first among urban respondents.

**Figure 6. 1 Probability pathways of first action taken by urban respondents in the previous month****Figure 6. 2 Probability pathways of first action taken by rural respondents in the previous month**

The absence of urban health centres in most urban areas best explained the difference; urban health centres existed in only 2 districts at the time of survey. Services obtained from the provincial hospital and private clinics were comparable by area of residence. However, rural respondents used private hospitals more for ambulatory care compared with their urban counterparts.

Differences in care seeking behaviour for ambulatory care also existed by income group (Figure 6.3). Similar to area of residence, the richer groups used district hospital (DH), provincial hospital (PH) and private facilities for ambulatory care more than the poorer groups; the poor were more likely to use health centres for ambulatory care.

**Figure 6.3 Ambulatory care sought in the previous month by income quintile**



#### *Utilization rate and take-up of UC benefit*

Forty-six percent of respondents used services at health facilities at least once in the previous month (Table 6.3). Amongst predisposing variables included in the analysis, gender was the only significant variable: women were more likely to use health facilities than men. Comparing the three enabling variables (area of residence, income, and reporting convenient access), difference in the probability of use of ambulatory care was observed by income and reporting convenient access to the registered hospital. The poor and those having better access to the registered hospital had a slightly higher probability of using health facilities for ambulatory care in the previous month than those in richer quintiles and

those reporting inconvenient access. Difference in the probability of use of ambulatory care was most apparent by presence of chronic conditions: those having chronic conditions used health facilities 1.4 times more than those without chronic conditions. The numbers of visits per episode were slightly different by all variables; however, they were significantly different only by presence of chronic conditions. Elderly who had chronic conditions used ambulatory care more than those without chronic conditions. It should be noted that the number of visits per episode of men was higher than that of women even though the probability of use of the former was less than the latter. The service utilization rate was highest amongst the poor and those with chronic conditions as the result of their relative high level of both the probability of use and the number of visits per episode.

Thirty nine percent of all respondents used the UC card at least once in the previous month. The probability of using the UC card and the number of visits covered by the UC scheme was similar to overall service use. The poor and those with chronic conditions had the highest utilization rate covered by the UC scheme.

In general, 84% of formal care actions were covered by the UC scheme. Use of UC card when getting formal care was comparable across most variables. Those in the poorest income group were more likely than the others to use the UC card in getting care, while those who reported inconvenient access used the UC card relatively less in getting care; 86% of visits sought by the poorest group were covered by the UC scheme, while only 76% of visits sought by those reporting inconvenient access were.

**Table 6. 3 Service utilization and take-up of UC benefit in the previous month and utilization rate by various factors**

	N	Use health facilities		Use rate (visits/ person/ year)	Use UC card		Take up UC (visits/ person/ year)	% take up UC
		%	No. visits		%	No. visits		
Total	956	46	1.52	8.3	39	1.48	6.97	84
Sex								
Male	326	38**	1.63	7.4	34	1.62	6.6	82
Female	630	50**	1.47	8.8	42	1.42	7.2	89
Age								
60 – 69	508	47	1.47	8.3	41	1.43	6.9	83
70 and above	448	44	1.57	8.2	38	1.56	7.0	85
Marital status								
Unmarried	478	47	1.47	8.2	40	1.40	6.7	82
Married	478	45	1.56	8.4	39	1.57	7.2	86
Educational level								
None or < primary	100	44	1.76	9.2	41	1.58	7.7	84
Primary or above	856	46	1.49	8.1	39	1.47	6.9	84
Area of residence								
Urban	453	45	1.39	7.5	39	1.35	6.4	86
Rural	503	46	1.55	8.5	39	1.51	7.1	83
Income quintile of total population								
1	172	51	1.69	10.3	47	1.71	9.6	93
2	154	43	1.57	8.1	38	1.56	7.2	88
3	197	44	1.51	8.0	35	1.42	6.0	76
4	203	52	1.28	8.0	44	1.21	6.5	81
5	230	39	1.55	7.3	32	1.49	5.8	80
Reporting convenient access								
No	94	54	1.49	9.6	42	1.44	7.2	76
Yes	862	45	1.52	8.1	39	1.49	6.9	86
Presence of chronic condition								
No	296	31**	1.21*	4.6*	26**	1.22*	3.7*	82
Yes	660	52**	1.59*	10.0*	45**	1.55*	8.4*	84
Without disabilities	239	48	1.49	8.5	46	1.42	7.7	91
With disabilities	421	54	1.65	10.8	45	1.63	8.4	82

\* significant at  $P \leq 0.05$ \*\* significant at  $P \leq 0.01$

### 6.3.3.2 Hospitalization in the previous year

Twenty-three percent of respondents were admitted once in the previous year (Table 6.4). A significant difference in probability of admission was observed by gender, income, and presence of chronic conditions. Women were more likely to be admitted than men. Those in the poorest quintile had the highest probability of admission (32%). Respondents without chronic conditions had the lowest probability of admission, only 15% compared with 26% of those with chronic conditions. Those who had less than primary education and those who reported inconvenient access also had slightly greater probabilities of admission.

Only slight difference in the number of admissions amongst hospitalized respondents was observed by most variables with the exception of area of residence. More frequent admissions were observed among respondents residing in urban areas, 1.9 admissions compared with 1.4 admissions of their rural counterparts. However, rural elderly had a higher average length of stay than their urban counterparts (Table A6.8). It is noticeable that even though those reporting inconvenient access had a slightly greater probability of admission, they were less frequently admitted than those reporting convenient access. Relatively high admission rates were observed amongst those residing in urban areas, the poor, and those with chronic disabling conditions.

A similar pattern for probability of admission and number of admissions was observed for admission covered by the UC scheme. Take-up of UC benefit for hospitalization was generally high, 96% of all admissions. However, a slightly lower take-up of UC benefit was identified amongst those who were in the highest income quintile (94%), male (92%), aged below 70 (93%), and reporting inconvenient access (93%). Similar to overall admissions, the relatively high admission rates under the UC scheme were observed amongst urban elderly, the poor, and those with chronic disabling conditions.

Nearly all admissions were in public hospitals while the private hospital played a minimal role. Admissions in district hospitals and the provincial hospital accounted for 61 and 32% of all admissions respectively. However, there was a considerably greater proportion of admissions in a public hospital outside the province amongst those residing in rural areas, the poorest quintile, and reporting inconvenient access (Figure A6.2, Figure A6.3, and Figure A6.4).



**Table 6. 4 Hospitalization in the previous year**

	N	Admission (N=222)		Admission rate (%)	Use UC card (N=213)		Admission rate under UC (%)	% take up UC
		%	No. adm		%	No. adm		
Total	956	23	1.5	34	22	1.5	33	96
Sex								
Male	326	19*	1.3	26	18*	1.3	23	92
Female	630	25*	1.6	39	24*	1.6	38	97
Age								
60 – 69	508	21	1.4	30	19	1.5	28	93
70 and above	448	25	1.5	38	25	1.5	38	99
Marital status								
Unmarried	478	22	1.5	34	22	1.5	33	98
Married	478	23	1.5	34	22	1.5	32	95
Educational level								
None or < primary	100	31	1.3	40	31	1.3	39	100
Primary or above	856	22	1.5	33	21	1.5	32	96
Area of residence								
Urban	453	24	1.9	45	23	1.9	44	98
Rural	503	23	1.4	31	21	1.4	30	96
Income quintile of total population								
1	172	32*	1.5	48	30	1.5	45	97
2	154	18*	1.3	25	19	1.2	24	97
3	197	21*	1.7	36	20	1.8	35	98
4	203	21*	1.4	31	20	1.5	29	95
5	230	22*	1.5	32	20	1.5	31	94
Reporting convenient access								
No	94	30	1.2	36	28	1.2	33	93
Yes	862	22	1.6	34	21	1.6	32	97
Presence of chronic condition								
No	296	15**	1.4	22	15**	1.5	21	94
Yes	660	26**	1.5	39	25**	1.5	38	97
Without disabilities	239	23	1.2	28	22*	1.2	26	95
With disabilities	421	28	1.6	46	26*	1.7	44	97

\* significant at  $P \leq 0.05$ \*\* significant at  $P \leq 0.01$



### **6.3.4 Factors explaining service utilization and take-up of UC benefit**

All independent variables were included in multivariate analyses aiming to assess whether the UC scheme provided equal access in terms of service utilization and take-up of UC benefit among the elderly. Description and summary statistics of dependent and independent variables to determine the probabilities of using health facilities or the UC card for ambulatory care in the previous month are presented in Table A6.9 in Appendix 6. Table A6.10 and A6.11 present the details of dependent and independent variables to determine the probabilities of the number of ambulatory visits and visits covered by the UC scheme amongst those accessing health facilities and those using the UC card for ambulatory care respectively. Similarly, those relating to the probabilities of an individual being hospitalized or hospitalized under the UC scheme and the number of admissions of those being admitted and admitted using the UC card in the previous year are provided in Table A6.12, A6.13, and A6.14 respectively.

#### **6.3.4.1 Factors explaining use of ambulatory care in the previous month**

Results from the logistic regression and negative binomial regression analyses are summarized in Table 6.5. Corresponding with the results in Table 6.3, presence of chronic conditions, either with or without disabilities, was a significant predictor for the probability of an individual using health facilities or the UC card for ambulatory care in the previous month. Respondents with chronic conditions either with or without disabilities were 2 - 2.5 times more likely to use health facilities and the UC card for ambulatory care in the previous month. Men were less likely to use health facilities and the UC card for ambulatory care than women. There was no difference in the probability of use of health facilities by geographical area and income group, but those in quintiles 3 and 5 were less likely to use the UC card for ambulatory care than those in the poorest quintile.

Elderly respondents with chronic disabling conditions also more frequently used ambulatory care and the UC card than those without chronic conditions. Those in quintile 4 used health facilities and the UC card less frequently than those in the poorest quintile; however, no difference was observed between the poorest and other income groups. Elderly residing in urban areas had slightly fewer visits than their rural counterparts after controlling for other variables; however, there was no difference in the use of UC card by

area of residence. No differences in the number of visits or visits covered by the UC scheme by sex were observed.

In summary, access to overall ambulatory care was quite equitable, mainly explained by presence of chronic conditions. Moreover, those residing in rural areas seemed to be better able to access ambulatory care than those residing in urban areas, and the poor made better use of the UC benefit in getting ambulatory care than the richer groups.

**Table 6. 5 Factors explaining the probability of use of health facility and the UC card for ambulatory care and the number of visits and visits covered by the UC scheme in the previous month**

	Equation 1 (Logistic regression)		Equation 2 (Negative binomial regression)	
	Model 1	Model 2	Model 3	Model 4
Dependent variable	Any visit (anyuse)	Any visit covered by UC (anyuc)	Number of visits (use)	Number of visits covered by UC (uc)
N	956	956	433	376
Prob > F	<0.001	0.001	<0.001	<0.001
Independent variable				
Predisposing				
Male	0.59***	0.71*	0.065	0.058
Age70	0.85	0.83	0.053	0.062
Edu1	1.12	0.97	-0.144	-0.038
Married	1.15	1.07	0.022	0.081
Enabling				
Urban	0.96	1.04	-0.142*	-0.110
Conv_a	0.80	1.04	0.072	0.067
Quint2	0.75	0.70	-0.086	-0.113
Quint3	0.76	0.59**	-0.049	-0.137
Quint4	1.11	0.94	-0.225**	-0.311***
Quint5	0.65	0.56**	-0.005	-0.081
Need				
Chr1	1.99***	2.46***	0.236*	0.156
Chr2	2.51***	2.36***	0.328***	0.272***
Constant	NA	NA	0.284	0.236
/lnalpha	NA	NA	-16.99	-20.119
Alpha	NA	NA	<0.001	<0.001

\* Significant at  $P \leq 0.10$

\*\* significant at  $P \leq 0.05$

\*\*\* significant at  $P \leq 0.01$

#### **6.3.4.2 Factors explaining hospitalization in the previous year**

Similar to ambulatory care, presence of chronic conditions, especially chronic disabling conditions, was a significant positive predictor for the probability of an individual being admitted or admitted covered by the UC scheme in the previous year (Table 6.6). Those with chronic disabling conditions were 2 times more likely to be admitted or admitted covered by the UC scheme than those without chronic conditions. Income had a negative effect on the probability of hospitalization or hospitalization covered by the UC scheme; those in income quintiles 2 and 3 had a significantly lower probability of admission than those in quintile 1, whether overall admission or admission covered by the UC scheme. Men were also less likely to be admitted than women whether overall admission or admission covered by the UC scheme.

In contrast to the probability of admission, the number of admissions in the previous year among hospitalized respondents was explained mainly by predisposing and enabling variables. Those reporting convenient access or residing in urban areas were more frequently admitted than those reporting inconvenient access or residing in rural areas. A similar pattern was also observed among admissions covered by the UC scheme; reporting convenient access and residing in urban areas were the significant positive predictors for the number of admissions covered by the UC scheme among those using the UC card for their admissions. Having primary education or above was another positive predictor for frequent admissions among hospitalized respondents and those using the UC for hospitalization. Men also had slightly less frequent admissions than women, but not for admissions covered by the UC scheme. There was no difference in the number of admissions by income groups.

In summary, the probability of individuals being admitted, whether overall admission or admission covered by the UC scheme, was determined by presence of chronic conditions and favoured the poor, while having greater physical access and primary education or above explained the more frequent admissions.

**Table 6. 6 Factors explaining hospitalization in the previous year**

	Equation 3 (Logistic regression)		Equation 4 (Negative binomial regression)	
	Model 5	Model 6	Model 7	Model 8
Dependent variable	Any admission (admit)	Any admission covered by the UC scheme (anyuc)	Number of admissions (a40)	Number of admissions covered by the UC scheme (uc_1)
N	956	956	222	213
Prob > F	0.0118	0.0160	0.0013	0.0005
	OR	OR	Coef	Coef
Independent variable				
Predisposing				
Male	0.69*	0.63**	-0.191*	-0.182
Age70	1.25	1.35	0.071	0.079
Edu1	0.64	0.64	0.228**	0.224*
Married	1.43	1.38	0.036	0.047
Enabling				
Urban	1.12	1.16	0.305*	0.299*
Conv_a	0.68	0.73	0.218**	0.203**
Qunit2	0.47**	0.56*	-0.102	-0.177
Quint3	0.60***	0.63**	0.114	0.113
Quint4	0.62*	0.63	-0.077	-0.083
Quint5	0.66	0.67	-0.064	-0.076
Need				
Chr1	1.61**	1.58*	-0.108	-0.133
Chr2	2.01***	1.95**	0.180	0.174
Constant	NA	NA	-0.117	-0.082
/lnalpha	NA	NA	-4.016	-3.798
Alpha	NA	NA	0.018	0.022

\* Significant at  $P \leq 0.10$ \*\* significant at  $P \leq 0.05$ \*\*\* significant at  $P \leq 0.01$

## **6.4 Discussion**

### **Summary of findings**

In general, individual characteristics of urban and rural respondents were comparable even though there was an over-representation of female respondents. Almost all elderly persons were staying with their family and most of them received financial support from their children. The apparent difference between urban and rural respondents was economic status; the majority of those in rural areas were ranked in the low income quintile groups in contrast to their urban counterparts.

Health problems among the elderly were made up largely of various chronic conditions relating to their age such as degenerative changes of bones and joints and various organ systems. Moreover, two-thirds of those with chronic conditions also had some difficulties in performing their daily activities because of the illness. Women were more likely to report illness in the previous month than men, but men who reported illness reported more illness episodes than women. Presence of chronic conditions, especially chronic disabling conditions, was the most significant factor explaining illness episodes in the previous month. A difference in illness rate by income was also observed.

The majority of illness episodes were treated at health facilities; however, nearly one-fifth of episodes employed self-prescribing in spite of possession of a UC card. Care sought from district hospitals was most common among urban respondents and the richer groups, whereas care sought from health centres was most common among rural respondents and the poor. The richer groups also used ambulatory care from private facilities more than the poor. Use of ambulatory care and up-take of UC benefits were mainly influenced by presence of chronic conditions. Rural respondents seemed to make more frequent ambulatory visits than their urban counterparts. The poor also had more ambulatory visits and visits covered by the UC scheme than those in quintile 4.

For hospitalization, the probability of an individual being admitted or admitted covered by the UC scheme was strongly influenced by presence of chronic conditions, especially chronic disabling conditions. The poor also had a significantly higher probability of admission than those in upper income groups. Physical access best explained the number of

admissions or admissions covered by the UC scheme; those residing in urban areas and those reporting convenient access were frequent users. However, length of stay of rural respondents was longer than that of urban respondents. Those with primary education or above were also more frequently admitted than those having none or less than primary education. The number of admissions was comparable between income groups.

## **Discussion of findings**

### *Health problems among the elderly*

Presence of chronic conditions was generally high among the elderly in Yasothon. The prevalence of chronic conditions in this study (69%) was comparable with that from the study relating to health of the elderly in 1998 (72.5%) (Jitapunkul et al., 1999a). However, the prevalence of chronic disabling conditions in this study (44%) was much higher than that in the latter (19%). Both studies employed similar questions in the surveys; moreover, consistency of information between the survey and re-interview suggests that the relatively high prevalence of chronic disabling conditions in this study was due to greater severity of illness in the province itself rather than biases from the survey.

The average illness rate observed in this study (11.5 episodes/ person/year) was greater than that of the 2001 Health and Welfare Survey (H&W) (9.2 episodes/person/year) (NSO, 2001). Various reasons could explain the difference. Firstly, the questionnaire design differed: this study included not only acute illness episodes but also use of services for chronic illness during the 1-month recall period, while only one acute episode during the 2-week recall period was asked about in the H&W. Secondly, only information on the elderly was collected in this study, while information on all members in a household was collected and proxy respondents were allowed in the H&W. Finally, the relatively high prevalence of poverty in the province is likely to explain some part since illness is usually higher among the poor. Reanalysis of the 2001 H&W survey<sup>61</sup> by including only those aged 60 and above in Yasothon confirmed that the illness rate of older people in this province was much higher than that of the national average, 14.2 compared with 9.2 episodes/ person/ year.

---

<sup>61</sup> The 2001 H&W survey was conducted in all provinces and the sample size was calculated to represent provinces. There were 3,182 respondents in Yasothon and 462 respondents were aged 60 and above.

Difference in illness rates by economic status suggests that inequity in health among the elderly in Yasothon remained.

*Service utilization and take-up of UC benefit for ambulatory care*

The probability of seeking formal care amongst the elderly in this study was comparable to that of the 2001 H&W. Take-up of UC benefit for ambulatory care among the elderly (84%) was higher than that of the general population (60%) (Pannarunothai et al., 2002; HSRI, 2003). The relatively high take-up of UC benefit for ambulatory care amongst the elderly could be explained by the generally lower ability to pay of people in the province and the elderly. Information on take-up of UC benefit among the elderly was not available in the other two studies so comparison of take-up rate amongst the elderly between this study and the other two studies is not feasible.

Regardless of types of facilities, use of ambulatory care was quite equitable since it was explained mainly by need variables, presence of chronic conditions. The current health service delivery system seemed to favour those residing in rural areas, since they more frequently used ambulatory care from health facilities than their urban counterparts once ill. However, use of ambulatory care favouring rural elderly was found in a previous study (Jitapunkul et al., 1999b) so this is unlikely to be the effect of the UC scheme. However, in contrast to the study of Jittapunkul et al, the poor in this study used more ambulatory care than the better off. A similar pattern was observed for use of ambulatory care covered by the UC scheme. The lesser use of formal care covered by the UC scheme among the richer groups is best explained by their greater ability to pay and to seek care from private providers or unregistered hospitals than the poor and the relatively low cost of ambulatory care compared with inpatient care. In addition, they might doubt the quality of care provided by the UC scheme.

The analysis was done in the aggregate regardless of the differences in type of health facilities used; urban elderly and those in the richer quintiles used more hospital-based ambulatory care while rural elderly and those in the poorer quintiles used more ambulatory care at health centres. Quality of care provided by health centres might be questionable since it was provided mainly by paramedical staff such as midwives or sanitarians. Moreover, only a few health centres were upgraded to PCUs where there were doctors or

professional nurses providing care. However, the study did not explore quality of care issues so whether quality of care provided by different health facilities varied is unknown.

*Hospitalization and take-up of UC benefit for hospitalization*

The admission rate in this study, 34%, was much greater than that of the 2001 H&W among the elderly, 19% (NSO, 2001). The high admission rate in this study could be explained by similar reasons to those explaining the high illness rate. The H&W captured only up to three admissions while this study included all admission episodes. In addition, it is likely that a study focussing only on the elderly would capture more illness events and use of services than a study studying the general population. A similar result was found when comparing admission rates among the elderly from a health survey of the elderly and a national survey in the general population in a similar period. The admission rate in the previous year among people aged 60 and above in the health survey of the population aged 50 and above in 1995 was 30% (Chuprapawan, 1997), compared with only 13% in the 1996 H&W survey (NSO, 1996a). Poorer health of the elderly in this province might be another reason explaining the relatively high admission rate, as explained in the previous section.

The probability of an individual being hospitalized in the previous year, either for overall admissions or those covered by the UC scheme, was quite equitable; it was mainly influenced by need factors, the presence of chronic conditions. The relatively high probability of an individual being admitted among the poor was less likely due to better access among them, since the majority of them were living in rural areas and, unlike health centres, hospitals are located away from their home. Poorer health amongst the poor and women might be a better explanation; even though the model already controlled for need, only presence of chronic conditions was available and there was no information on acute conditions.

More frequent admission, either overall admissions or those covered by the UC scheme, was observed amongst those living in urban areas, reporting convenient access and with better education, indicating that inequity in use of hospital care remained. The longer length of stay of rural respondents, nearly double that of urban respondents, suggests that their conditions were probably more serious than those of urban respondents and required longer hospital days, though data are unavailable to confirm this.



Take-up of UC benefit for admission among the elderly was much higher than that of the general population; 97% in this study compared with 65-70% among the general population (Pannarunothai et al., 2002; HSRI, 2003). The relatively high cost of care for hospitalization best explains the generally high take-up of UC benefit for hospitalization.

#### *Methodological issues*

Lack of information on the pre-UC situation in Yasothon is a main limitation of this study since there is no information available for comparison. To what extent the current achievements can be attributed to the UC scheme is unknown. Moreover, free medical care for the elderly already existed before the UC scheme, even though it did not cover all of the elderly.

Under reporting of income and misclassification of income group are other concerns. Collecting only cash income and expenditure resulted in under reporting of income and expenditure data. Moreover, the likelihood of not recognising some transferred money as income, i.e. expenses paid by non co-resident children, would increase the underestimation. In addition, misclassification between income quintiles might exist as the correlation between per capita income and expenditure quintiles was not substantial (Appendix 5). Implications from misclassification of economic group may be more crucial than underreporting since the study aims to assess whether service utilization was equitable by economic group. Misclassification of income group would result in inaccurate results. Concerning the problem of income data and misclassification, various approaches were done to check consistency of results. Similar results were obtained from multivariate analyses when logarithm form individual per capita income or expenditure was employed instead of income quintile (details of the analyses not shown); this suggests that misclassification of income group might not be too problematic. In addition, by employing per capita expenditure quintile or the self-assessed economic status indicator instead of income data, similar trends were obtained from multivariate analyses, but with different degrees of correlation. The consistency of results from different economic indicators suggests that the weakness of income data might not be too problematic in analysing service use and that results are reasonably reliable when comparing economic groups.

Results from this study could be generalized to most provinces in Thailand, particularly those in the Northeast, due to similarities in the distribution of health infrastructure and socioeconomic development between areas of residence, and the fact that they all gained more budget from the new budget allocation criteria of per capita registered beneficiaries. Differences in the pattern of care seeking behaviour and use of UC card in getting care might be observed in richer and well-developed provinces i.e. Bangkok, Chiangmai, Phuket, etc. Different effects on service utilization might be observed in provinces with financial deficits from the new budget allocation formula; budget constraints in hospitals might affect access and quality of care for the elderly, particularly the urban poor elderly. Because the MOPH protects health centres from financial constraints and requires all CUPs to allocate an adequate budget for operating services to health centres, negative consequences from financial constraints are more likely to affect those in urban areas, especially the poor, who obtain their primary care from hospitals.

## 6.5 Conclusion

The generally high prevalence of chronic conditions plays a crucial role in determining illness episodes and service utilization among the elderly. The extremely low illness and service utilization rates among elderly without chronic conditions suggests that the relatively high illness and service utilization rates among the elderly was due to presence of chronic conditions, not age *per se*, and that age may not be the best explanation for service utilization.

The current health service delivery system in Yasothorn appears to provide equitable access to ambulatory care for the elderly and favours those residing in rural areas and health centres play a substantial role in this achievement. The UC scheme also provides equitable access to ambulatory care for the elderly and favours the poor. However, whether the elderly received appropriate care specific to their need is unclear due to lack of information on intensity and quality of care. In contrast to ambulatory care, access to hospital care for hospitalization is still inequitable, probably due to the problem of physical access. The current health service delivery system and the UC scheme provide greater access to hospital care for those residing in urban areas and those reporting convenient access. Nevertheless,

further investigation is needed into the quality of rural ambulatory care and whether more frequent admission is desirable or not.

---

## CHAPTER 7: EQUITY OF OUT-OF-POCKET PAYMENT

### 7.1 Introduction

Fair financial contribution has been emphasized as an intrinsic goal of the health system; the risks faced by individuals due to the costs of health care should be distributed according to ability to pay rather than the risk of illness (WHO, 2000). This chapter aims to document the existing situation and the magnitude of problems relating to equity of out-of-pocket spending among the elderly after one year of its implementation in Yasothon. The concept of vertical equity, that health care ought to be financed according to ability to pay, was employed (Wagstaff and Van Doorslaer, 1993). In an equitable situation, the richer groups should spend an equal or greater percentage of their incomes than the poor.

A brief methodology is provided in the next section followed by results. The results section includes brief individual characteristics, mean expenditure on ambulatory care and hospitalization among those spending out-of-pocket by income quintile, burden of out-of-pocket health expenditure, and equity of out-of-pocket payment. Discussion of the results is provided subsequently followed by conclusions at the end.

### 7.2 Methodology

The study focused on the degree of progressivity or regressivity of out-of-pocket spending on health care caused by both medical and non-medical expenditure in relation to household ability to pay. Income was chosen as the indicator of ability to pay, rather than household expenditure or assets, for various reasons (details are provided in Appendix 5). The study aimed to assess availability of cash income to pay for health care, not the standard of living of the elderly. Average monthly income from various sources were collected, and adding in income of other family members, while only an average monthly household expenditure was collected. Therefore, income data may be more accurate. Moreover, consistency of survey income data with the re-interview suggests that income data were reasonably reliable. *An unadjusted* per capita monthly cash income was employed to rank individuals by income quintile. Unavailability of the household demographic profile in the database made the study unable to calculate income per adult

equivalent. Only cash income was collected in the study and it was assumed to represent non-subsistence income.

Out-of-pocket expenditure on health care included both medical expenditure and non-medical expenditure related to the use of care, such as transportation, private ward, and food. Both types of expenditures were collected as aggregates for each visit or admission. Total actual health expenditure was available individually for ambulatory care for a month, and for a whole year for hospitalization. Expenditure on ambulatory care included expenditure incurred from the use of both acute and chronic conditions. Total health expenditure in the previous year for each income quintile was calculated by summing up individual expenditures on ambulatory care in the previous month multiplied by 12 and adding in expenditures on hospitalization in the previous year.

Data were obtained from the household survey which consisted of 956 UC cardholding beneficiaries aged 60 and above who had complete household income data. Respondents were sampled equally from urban and rural areas by a 2-stage cluster sampling with a total of 48 clusters. Information sought included household cash income, number of members in the household, illness and use of service within the previous month and hospitalization in previous year, in addition to use of the UC card in getting care, and medical and non-medical expenditures for ambulatory care in the previous month and for hospitalization in the previous year. Analysis was done using STATA7.0 and the survey effect and sample weights were taken into account in the analysis as explained in the previous chapter.

## **7.3 Results**

### **7.3.1 Individual and household characteristics**

In general, there was no apparent difference in the distribution of demographic variables by income quintile (Table A7.1 in Appendix 7). Males and females were comparable by income quintile, but there was a slightly greater proportion of elderly aged 70 and above in quintiles 1 and 2. A slightly greater number of household members was also observed amongst those in poorer quintiles; average household members of those in quintile 1 and 2 was 4.2 persons compared with 3.9 and 3.7 persons of those in quintile 4 and 5.

The main differences were observed by various aspects of socioeconomic status. Considerably smaller percentages of elderly had primary education or above in the two bottom quintiles compared with the richer quintiles. The proportion of working elderly was least among those in the poorest quintile; moreover, they were less likely to receive financial transfer compared with the richer groups. The majority of elderly people received financial support from their children; however, smaller proportions of elderly in quintiles 1 and 2 received such financial support compared with the richer groups. The proportion of elderly people receiving the 300-Baht monthly welfare allowance in the poorest quintiles was comparable with that in quintiles 3–5<sup>62</sup>. Per capita cash incomes of those in the three bottom quintiles were less than the sample average (Table A7.1) and below the poverty line of the province<sup>63</sup>. Inequity in income distribution was apparent; those in the top income quintile earned 60% of total incomes while those in the poorest quintile earned only 2% of total incomes. Disparity in income distribution by area of residence was also apparent; greater proportions of those in quintiles 4 and 5 resided in urban areas compared to those in quintile 1 and 2 (Table A7.1). Self-reported inconvenient access to services at registered hospital was significantly different across income groups; a greater proportion of the poorest group reported inconvenient access compared with the richer groups.

### **7.3.2 Mean expenditure on ambulatory care and hospitalization by income quintile**

Theoretically, no co-payment is required for elderly persons and those previously covered by the MWS if they comply with the requirements for accessing free care. However, non-medical expenditure related to the use of care remains, such as transportation, costs caused by accompanying persons, and private ward and food (if chosen). In fact, ambulance service is already covered by the scheme; however, in practice, it is available for only

---

<sup>62</sup> Information gathered from in-depth interviews with village heads reveals that the target of 10% of elderly population was set by the government and it was allocated equally to villages. Distribution of the allowance to the elderly was done by village committee and the priority was given to the oldest old.

<sup>63</sup> The poverty line in Yasothon was 900 Baht per person per month in 2001 ([http://poverty.nesdb.go.th/Pov\\_Incidence/Stat\\_index.htm](http://poverty.nesdb.go.th/Pov_Incidence/Stat_index.htm) (in Thai) accessed on 15/08/2003).

transferring patients between health facilities, i.e. from district hospital to provincial or regional hospital.

This section aims to explore expenditures on ambulatory care in the previous month and hospitalization in the previous year by income quintile. Only respondents spending out-of-pocket on ambulatory care in the previous month and those spending out-of-pocket on hospitalization in the previous year were included and are analysed separately in this section. Expenditures caused by medical care and non-medical items related to the use of care were summed up individually to produce total expenditures on ambulatory care in the previous month and hospitalization in the previous year, and compared by income quintile.

### 7.3.2.1 Mean expenditure on ambulatory care in the previous month by income quintile

In general, 85 % of respondents who sought ambulatory care in the previous month incurred out-of-pocket expenditure, but less than half of them spent on medical care (Table 7.1).

**Table 7. 1 Mean expenditure on ambulatory care in the previous month among those spending out-of-pocket by income quintile (Baht in 2002 price)**

Quintile	No. respondents seeking care	Respondents with medical expense		Respondents with non-medical expense		Respondents with total expense			
		N	Mean (Median)	N	Mean (Median)	N	Medical (Median)	Non-medical (Median)	Total (Median)
1	109	41	198 (20)	73	76 (40)	90	86 (0)	61 (20)	147 (40)
2	75	27	307 (100)	53	96 (30)	60	151 (0)	85 (20)	236 (40)
3	105	46	295 (135)	71	87 (30)	89	175 (5)	67 (20)	241 (40)
4	111	38	255 (145)	81	60 (30)	95	109 (0)	51 (20)	160 (40)
5	124	63	306 (85)	86	154 (35)	113	198 (6)	112 (20)	310 (40)
Total	524	215	273 (65)	364	92 (30)	447	141 (0)	75 (20)	216 (40)

Mean expenditure caused by medical care was greater than that caused by non-medical items. As expected, the level of expenditure caused by medical care among visits covered by the UC scheme was much lower than that on visits which required spending out-of-pocket and that caused by non-medical items related to the use of care (Table A7.2 and Table A7.3). Distance and type of transportation probably best explained the level of non-medical expenditure on ambulatory care. Mean non-medical expenditure was highest for ambulatory visits obtained from a public hospital outside the province (Table A7.3).

Mean medical expenditures for ambulatory care in the previous month were lowest among those in quintile 1. The greater use of the UC card in getting care and the less frequent use of private facilities among those in the poorest group (Table 6.3 and Figure 6.3 in Chapter 6) explained their relatively low mean medical expenditures for ambulatory care. Mean non-medical expenditure was comparable between those in quintiles 1–4, but it was slightly high among those in the richest group.

### **7.3.2.2 Mean expenditure on hospitalization in the previous year by income quintile**

Nearly all hospitalized elderly respondents spent out-of-pocket on health care; however, only 10% of them spent on medical care (Table 7.2). The relatively high expense would be incurred for admissions covered by out-of-pocket payments (Table A7.4). However, a few admissions covered by the UC scheme still incurred high expenses on medical care (Table A7.5 in Appendix 7). Expenditure caused by non-medical items related to hospitalization was generally higher than that for ambulatory care, and it increased with length of stay (Table A7.6 and Figure A7.1).

Mean total expenditure on hospitalization in the previous year was relatively high among those in quintiles 1, 2, and 5. The high expenses among those in quintile 5 were mainly due to non-medical expenses (Table 7.2), while both medical and non-medical expenditures were high among those in quintiles 1 and 2. Staying in a private ward best explained their relatively high expenses apart from their relatively long hospital stay (Figure A7.2). It should be noted that the relatively high mean overall expense among those in quintiles 1 and 2 was driven by the extremely high expenditure of a few respondents, as shown in Table 7.2, and their relative long hospital stay (Figure A7.2).



**Table 7. 2 Mean expenditure among respondents with expense on hospitalization in the previous year by income quintile (Baht in 2002 price)**

Quintile	No. Respondents with hospitalization	Respondents with medical expense		Respondents with non-medical expense		Respondents with total expense			
		N	Mean (Median)	N	Mean (Median)	N	Medical (Median)	Non-medical (Median)	Total (Median)
1	52	6	7,755 (3,250)	51	2,341 (700)	51	1,183 (0)	2,341 (700)	3,523 (700)
2	37	3	14,533 (8,000)	34	1,890 (500)	35	1,414 (0)	1,868 (500)	3,282 (500)
3	40	5	961 (370)	39	926 (420)	39	132 (0)	926 (420)	1,057 (420)
4	42	3	3,230 (1,200)	38	937 (370)	40	280 (0)	891 (340)	1,171 (450)
5	51	7	2,034 (1,400)	51	3,252 (600)	51	363 (0)	3,252 (600)	3,615 (820)
Total	222	24	5,295 (1,300)	213	1,931 (500)	216	706 (0)	1,910 (500)	2,617 (500)

### 7.3.3 Distribution of burden of expenditure by income quintile

In this section, distributions of the burden of expenditure of individuals on ambulatory care in the previous month and hospitalization in the previous year, in relation to their per capita monthly and annual cash income, respectively, are explored by income quintile.

#### 7.3.3.1 Burden of expenditure on ambulatory care in the previous month

Two-thirds of individuals in quintile 1 who sought care in the previous month had no expense caused by medical care, compared with 42% of those in the top quintile (Table 7.3). However, there were greater proportions of high burden from medical care among those in the three bottom quintiles, 10% or more compared with 5% or less of those in the two top quintiles.

For expenditure caused by non-medical items, one third of respondents who sought ambulatory care in the previous month in all quintile groups had no expense on this

category. The majority of those with expense spent less than 10% of their per capita monthly cash income on this with the exception of those in quintile 1 (33%). It is worth noting that there were greater proportions of those with high burden caused by non-medical items than that caused by medical care among those in quintile 1, while the mean expenditure caused by medical care was greater than that caused by other items. This is because the relatively high mean expenditure caused by medical care of those in quintile 1 was driven by the relatively high expenditure of a few respondents.

Considering the level of total payments made by them, and their income levels, suggests that the greater proportion of high burden among those in the bottom quintile was likely due to their low income rather than the high expenses, since their actual expenses were less than those of others (Table 7.1).

### **7.3.3.2 Burden of expenditure on hospitalization in the previous year**

Corresponding with the high take-up of UC benefit for hospitalization, more than 80% of individuals who were hospitalized at least once in the previous year in all income groups had no expense caused by medical care (Table 7.4). However, 13 and 8% of those in quintiles 1 and 2 spent out-of-pocket greater than or equal to 40% of their per capita annual cash income on hospitalization for medical care.

For expenditure caused by non-medical items, the majority of hospitalized respondents in quintiles 3–5 spent out-of-pocket less than 10% of their per capita annual cash income on this category. In comparison, more than half of those in quintile 1 spent greater than or equal to 40% of their per capita annual cash income on non-medical items for hospitalization. The greatest proportion of high burden from hospitalization among those in quintile 1 could be explained by the relatively long hospital stays and high cost of obtaining inpatient care relative to their extremely low income.

The differences between the distribution of burden of expenditure on ambulatory care and hospitalization could be explained by various reasons. The relatively high take-up of UC benefit for hospitalization explained the greater proportion of no expense on medical care for hospitalization compared with ambulatory care. The relatively high cost of obtaining inpatient care explained the greater burden and proportion of high burden of expenditure for hospitalization, particularly amongst the poor, compared with ambulatory care.

**Table 7. 3 Expenditure on ambulatory care in previous month as percentage of monthly per capita cash income among respondents seeking care**

quintile	N	% of individuals in quintiles with specified % burden to per capita household income																	
		Expenditure on medical care						Expenditure on non-medical items						Total expenditure					
		none	<10	10-19	20-29	30-39	40 +	none	<10	10-19	20-29	30-39	40 +	none	<10	10-19	20-29	30-39	40 +
1	109	65	15	6	3	2	10	34	10	11	8	4	33	19	22	8	6	5	40
2	75	61	14	2	2	7	16	29	36	10	3	9	14	20	33	12	2	10	24
3	105	52	20	2	2	5	19	38	44	8	6	0	4	18	42	8	4	4	23
4	111	64	15	8	8	0	5	27	58	10	3	1	0	15	52	11	13	3	5
5	124	42	43	3	8	3	2	35	60	2	3	0	0	10	68	9	5	2	7
Total	524	57	21	4	5	3	10	33	41	8	5	3	11	16	43	10	6	5	20

**Table 7. 4 Expenditure on hospitalization in previous year as percentage of annual per capita cash income among respondents with admission**

quintile	N	% of individuals in quintiles with specified % burden to per capita household income																	
		Expenditure on medical care						Expenditure on non-medical items						Total expenditure					
		none	<10	10-19	20-29	30-39	40 +	none	<10	10-19	20-29	30-39	40 +	none	<10	10-19	20-29	30-39	40 +
1	52	85	3	0	0	0	13	1	17	11	5	1	64	1	17	11	5	1	64
2	37	90	1	0	0	0	8	3	30	25	6	14	21	2	31	25	6	10	25
3	40	86	9	1	0	0	4	1	56	20	8	11	4	1	56	19	8	9	8
4	42	91	1	4	0	0	4	7	72	11	1	4	6	2	69	14	1	4	10
5	51	82	10	7	0	0	0	0	75	13	2	1	8	0	68	21	2	1	8
Total	222	87	5	2	0	0	6	2	48	16	4	6	25	1	46	17	4	4	27

### 7.3.4 Equity of total out-of-pocket payment in the previous year by income quintile

In the previous section, the burden of out-of-pocket payment of individuals was analysed separately for ambulatory care and hospitalization since expenditure on ambulatory care for both acute and chronic conditions was available for individuals for only one month. In this section, total annual expenditure on ambulatory care is estimated for each income quintile and added to expenditure on hospitalization to produce total annual expenditure for each quintile.

In general, the burden of out-of-pocket payment caused by both medical and non-medical care was generally high among older people and extremely high among the poor (Table 7.5). Total annual health expenditure of the elderly accounted for, on average, 13% of their per capita annual cash income; this figure increased to 98% for the poorest quintile. The burden of out-of-pocket payment from ambulatory care was, in general, greater than that from hospitalization, with the exception of those in the poorest quintile. More frequent use and relatively less compliance with the UC scheme for ambulatory care explained the high burden caused by ambulatory care. Overall, the burden of out-of-pocket payment caused by medical care played an equal role with that caused by non-medical items. The burden of expenditure caused by medical care was greater than that caused by non-medical items for ambulatory care and vice versa for hospitalization, as explained in the previous section.

**Table 7. 5 Percentage of per capita annual cash income spending on ambulatory care and hospitalization in the previous year by income quintile**

Quintile	Per capita annual cash income (Baht)	Ambulatory care		Hospitalization		Total
		Medical	Non -medical	Medical	Non-medical	
1	1,801	30	19	15	34	98
2	4,100	16	9	5	8	38
3	7,037	10	5	0	3	18
4	12,617	6	2	0	2	10
5	31,201	4	2	0	2	8
Total	11,330	6	3	1	3	13

There was a consistent gradient of burden of expenditure; the poor spent out-of-pocket in relation to their ability to pay more than the rich. Even though those in the poorest quintile

had the lowest mean individual total expenses on ambulatory care (Table 7.1), they had the highest burden of out-of-pocket expenditure on ambulatory care. This could be explained by the relatively high illness and service utilization rates among them in addition to the extremely low per capita cash income, less than 200 Baht per month. The low income of the first three quintiles, which were below the sample average, explained some part of the relatively high burden of expenditure amongst them. The extremely high burden of out-of-pocket expenditure for hospitalization among those in quintile 1 could be explained by the high admission rate among them (Table 6.4 in Chapter 6) and the extremely high expenditures of a few respondents in contrast to their extremely low per capita cash income.

## **7.4 Discussion**

### **Summary of findings**

In summary, poverty was prevalent in Yasothon, with more than half the elderly living below the poverty line. Inequity in income distribution was apparent, in addition to disparity in the distribution by area of residence. Expenditures caused by medical care among visits spending out-of-pocket were generally much greater than for those covered by the UC scheme, either for ambulatory care or hospitalization. Expenditures caused by non-medical items remained and played an equal role with those caused by medical care. Distance from health facility, type of transportation, number of hospital days, and type of hospital ward affected expenditures on non-medical items related to the use of care.

Mean out-of-pocket expenditure caused by medical care was greater than that caused by non-medical items for ambulatory care, since a substantial proportion of care-seeking actions were not covered by the UC scheme. In contrast, expenditure caused by non-medical items played a greater role than that caused by medical care for hospitalization. This was due to the relatively high take-up of UC benefit and the relatively high cost of accessing inpatient care.

Mean total expenditure on ambulatory care in the previous month of individuals spending out-of-pocket in quintile 1 was the lowest while it was the highest among those in quintile 5. Mean total expenditure on hospitalization of individuals spending out-of-pocket in

quintiles 1, 2, and 5 was higher than that of those in quintile 3 and 4. The relatively higher number of hospital days amongst them explained some part. The extremely high expense on medical care of a few respondents in the two bottom quintiles explained the relatively high mean medical expenditure on hospitalization amongst them. The relatively high expenditure on hospitalization among those in the richest quintile was mainly due to expenditure caused by non-medical items; this was best explained by staying in a private ward.

The majority of those who used ambulatory care in the previous month and those who were admitted in the previous year had no expense caused by medical care. However, a substantial proportion of those in the bottom quintiles spent out-of-pocket greater than or equal to 40% of their per capita cash income on ambulatory care and hospitalization.

There was a consistent gradient of burden of out-of-pocket payments by income group with an extremely high burden among the poor. The relatively high utilization rate of those in the poorest quintile explained some part of their relatively high burden of out-of-pocket expenditure in addition to the extremely high expense of a few respondents. Moreover, the extremely low income of the poor played a crucial role.

### **Methodological issues**

The main issue of concern in this study is income measurement; the reliability of income data and inclusion of only cash income in the study. Measurement of income is difficult and problematic in developing countries, where the majority of people are engaged in the informal sector. Under-reporting of income is likely, and may have originated both from the operational definition of income employed in the study, and respondent's misreporting. What should be included in income was problematic. For example, respondents may not perceive that the payments on their health care made by their children formed part of their income. However, consistency of household income data between the survey and the re-interview suggests that under-reporting of income was more likely due to the problem of operational definition rather than recall bias or interviewers' bias.

Comparing income data from this study with the 2002 Socio-economic survey (SES) in Yasothon<sup>64</sup>, monthly household income in this study was 59% of that from the SES. Expenditure on food, on average, accounted for 40.4% of total monthly expenditures in the SES survey. More specifically, expenditure on food accounted for 46, 40, 31, and 44% of total monthly household expenditure among those in the agricultural sector, own-account workers, formal workers, and economically inactive households, respectively. This suggests that cash income from this study reasonably represented non-subsistence income according to the WHO definition (40% of household expenditures were spent on food). However, another problem arises from the inclusion of only cash income; it may have different effects on different income groups. As the poor were predominantly in rural areas and engaged in the agriculture sector, so cash income of the poor might represent non-subsistence income. However, cash income reported by the richer groups might represent their real gross income. This would result in overestimated income and underestimated burden of the richer groups, and would widen the gap of income and burden of out-of-pocket expenditure between the richer groups and the poor. However, a vast difference in the level of income would remain even if the per capita income of those in the two bottom quintiles increased by 40%.

A substantial difference in quintile grouping between whether income or expenditure data are employed (Table A5.3 in Appendix 5) raises another concern relating misclassification of economic groups. A lesser degree of inequity would be observed if expenditure data had been employed to classify individuals instead of income data. Mean income of those in quintile 1 and 2 was lower than their expenditure, and vice versa for those in quintile 4 and 5 (Table A5.1). Mean income of those in quintiles 1- 5 was 0.39, 0.82, 1.01, 1.52, and 2.43 times their mean expenditure respectively. However, a gradient of burden of out-of-pocket expenditure would remain even if expenditure-based data had been employed instead of income.

---

<sup>64</sup> Source: <http://yasothon.nso.go.th/sss/sss.htm> (in Thai) accessed on 15/08/2003

**Discussion of findings***Medical and non-medical expenditure*

Comparing mean medical expenditure of episodes covered by out-of-pocket payments with those covered by the UC scheme reveals that the UC scheme reduced considerably expenditures caused by medical care for the elderly, especially for hospitalization. Nearly all ambulatory visits or admissions covered by the UC scheme had no expense caused by medical care; however, a few admissions incurred medical expenses for services not covered by the scheme. Therefore, the high burden of out-of-pocket expenditure caused by medical care was mainly due to non-compliance with the UC requirements for accessing free care. The relatively low cost of ambulatory care best explained the relatively low take-up of UC benefit in getting ambulatory care. And the more frequent use of low cost ambulatory care resulted in substantial expenditure on ambulatory care. Expenditure caused by medical care for those admission episodes covered by out-of-pocket payments was generally high and much greater than that for ambulatory care; this explains the generally high take-up of UC benefit for hospitalization.

For expenditure caused by non-medical items, the cost of obtaining ambulatory care from the local health centre was generally low or absent, especially for those in rural areas. High expense was incurred only when getting care from health facilities further afield, i.e. provincial hospital or public hospital outside the province. The comparable level of non-medical expenditure for ambulatory care by area of residence and income group could be explained by the common use of services in health centres among those in rural areas and the low income groups (Figures 6.1 - 6.3 in Chapter 6). Expenditure caused by non-medical items related to hospitalization was generally high among the poor since most of them resided in rural areas. This expenditure related to items such as transportation, accommodation, and food, for not only the patient but also those accompanying them during the stay in hospital. Bus services are usually less available in rural areas and people may have to hire a car to get care at a hospital, especially among those seriously ill or with limited physical mobility. Patients do not have to pay for bed and meals when they stay in a



public ward in public hospitals<sup>65</sup>, but some of them may prefer to stay in a private ward and spend out-of-pocket for a room and meals. However, only aggregated expenditure data were collected for both medical and non-medical expenditure, so what they spent on specific items was unknown.

#### *Equity in out-of-pocket expenditure*

This is the first study exploring equity in out-of-pocket payments among the elderly in Thailand. Most studies relating to equity in the finance of health care in Thailand assessed overall equity in the population, rather than focusing on a particular group of the population (Pannarunothai and Mills, 1997; Makinen et al., 2000; Pannarunothai and Patmasiriwat, 2001). Previous evidence revealed that there was an improvement in the equity of health care financing in Thailand as measured by the Kakwani index during the period 1986 – 1998, although some inequity remained (Pannarunothai and Patmasiriwat, 2001). The improvement was due to the expansion of public spending by expanding the coverage of public insurance schemes during the same period.

Focusing on older people, their burden of out-of-pocket expenditures on health care will be generally high and much higher than other population groups due to the relatively high utilization rates and per capita health expenditures amongst them compared with other age groups. The inclusion of both medical and non-medical expenditure is another explanation; expenditure caused by non-medical items contributed to half of the overall burden. The relatively high burden of out-of-pocket payments in this study was also driven by the extremely low household income of the province. Yasothon is one of the poorest provinces in Thailand; average household monthly income in 2001 was the lowest in the country, and more than half of the population were under the poverty line.

Under-reporting of income was another explanation for the extremely high burden of expenditure, particularly amongst the poor. The 98% burden of expenditure on health care amongst the poor seems very high and would not reflect the actual situation because of underestimation of income and transfers. Firstly only cash income was included, and this will underestimate income particularly amongst the poor since the majority of them were

---

<sup>65</sup> Meals may not be provided in a few small district hospitals.

engaged in the agricultural sector. Secondly, it is likely that people might not perceive and report expenses paid by their children on their health care as income.

The consistent gradient of burden of out-of-pocket payments across income groups indicates that inequity in the finance of health care for the elderly remained. However, considering both the level of payment and per capita income, the relatively high burden of the poor was likely due more to their very low cash income rather than the overall relatively high cost of care. The huge difference in burden of out-of-pocket health expenditure by income group was the result of the obvious inequitable distribution of income among households within the province. The mean per capita cash income of those in the first three quintiles was below the sample average, and the per capita income of the richest was 17 times that of the poorest. In addition, the poor also had relatively high illness and utilization rates; this inevitably resulted in high burden of out-of-pocket expenditure among them. Even though the poor more frequently used the UC card in getting care, expenditure caused by non-medical items remained. The absolute burden on the poor has probably been overestimated for the reasons explained earlier. However, even if the per capita income of the first two quintiles was doubled or tripled, differences in the relative burden would remain.

The study did not take time or wage losses of the patient and accompanying persons into account in the analysis. The opportunity costs of accessing hospital-based ambulatory care were probably higher than non-hospital based care, particularly for the poor and rural elderly, due to the relatively high cost of transport and hospital queues. For hospitalization, the richer groups might have higher opportunity costs from wage and time losses, but they also might be able to hire a nurse or maid to accompany the patient which would reduce their opportunity costs. Even if the opportunity costs of accessing health care were taken into account, the gradient of out-of-pocket expenditure would remain from the vast difference in income distribution.

To what extent the UC scheme had improved the situation is unclear due to lack of evidence prior to the UC policy. Providing universal coverage would reduce the burden of out-of-pocket expenditures for elderly persons who were previously uninsured and who complied with the UC requirements for accessing free care. Improving the provision of

services in health centres would reduce non-medical expenditures for ambulatory care for older people residing in rural areas and the poor.

Results from this study should be extrapolated to the whole of Thailand with caution because of the limitations of the income data as mentioned earlier and the difference in socio-economic status between provinces. However, the high burden of expenditure caused by non-medical items and the difference by geographical area could be generalized to most provinces in light of the similarities of health care delivery and transportation systems.

## 7.5 Conclusion

Inequity in out-of-pocket payment among the elderly remained in spite of the UC scheme and inequity in income distribution played a substantial role in this. The high burden of out-of-pocket payment derived from both medical and non-medical expenditures. The relatively high burden of expenditure caused by medical care among the poor was due to the relatively high illness and service utilization rates among them, their choice not to use the UC card in getting care, and their extremely low income. The relatively high cost of obtaining hospital care was an additional reason explaining the relatively high burden caused by expenditure on non-medical items among the poor. Because of problems in measuring income, limited weight should be placed on the absolute levels of burden (expenditure as a share of cash income) estimated in this chapter. However, relative differences across income groups clearly indicate the existence of inequity, and levels of per capita expenditure amongst the poor also give cause for concern.

Since the poor mainly live in rural areas, addressing inequity means addressing expenditure caused by non-medical items and physical access. Improving the quality and availability of services at primary level will improve physical access and reduce opportunity costs of accessing care for the poor and those residing in rural areas. In addition, improved quality of care at primary level may increase overall compliance with the UC scheme by the poor or those residing in rural areas for ambulatory care; this will result in a reduction of the burden of expenditure caused by both medical care and other items. Currently, only a few health centres have been upgraded to a PCU, so expansion of PCUs to meet the standard set by the MOPH (1 PCU per 10,000 population) will improve physical access and reduce the burden of out-of-pocket expenditures for elderly persons, the poor, and those residing in

rural areas. Establishing an effective ambulance system for transferring seriously ill patients is another policy option. Even though ambulance service is already included in the benefit package, it is usually available only for transferring patients between hospitals, for example referring a patient from a district hospital to a provincial hospital or from a provincial hospital to a tertiary hospital. The establishment of an effective ambulance service for transferring seriously ill patients between health centre and hospital would benefit not only older people but also the poor who reside in rural areas. In addition, a broader policy context should be considered in order to tackle the issue of inequity of income distribution since this is beyond the scope of the health sector to deal with.

## **CHAPTER 8: CATASTROPHIC HEALTH EXPENDITURE**

### **8.1 Introduction**

It is generally accepted that impoverishment according to the use of health care is undesirable and unfair (Murray, 2000). In order to avoid this undesirable effect, prepayment schemes are preferable to out-of-pocket payment at the point of use since the latter is the least equitable means of financing health care (WHO, 1999). Protecting individuals or households from impoverishment from medical bills is an important function of health insurance apart from enabling access to effective care (Kutzin, 1998). Therefore, providing universal health coverage with effective financial protection for the elderly should protect them from catastrophic health expenditures.

Results from the previous chapter revealed that there were substantial proportions of individuals in the low income groups spending greater than or equal to 40% of their per capita cash income on health care. The burden of out-of-pocket payment was also extremely high among the poor. These issues raise questions of why the burden of out-of-pocket expenditure among some was so high in spite of the UC scheme, how they coped with it, and what the implications on individuals or households were. The objectives of this chapter are to identify the magnitude of catastrophic events, reasons behind the problem, and coping mechanisms adopted by the elderly to pay for health care and their implications on individuals or households. Measurement of catastrophic expenditure and a brief methodology are described in the next section. Results of the study are presented in three aspects relating to the objectives: magnitude of catastrophic expenditure, explanatory factors, and coping strategies and implications for individuals or households. Discussion of the findings is provided subsequently, followed by conclusions at the end.

### **8.2 Methodological approach**

Catastrophic health expenditure refers to expenditures exceeding a percentage of income that cause a household difficulties and must reduce its basic expenditures over a period of time in order to cope with health care costs (Kawabata et al., 2002). The first part of the definition deals with quantifying burden of expenditure in relation to the ability or

capability of individuals to pay, while the latter part of the definition deals with implications for individuals in terms of costs and coping. Household income or expenditure has been commonly used to represent households' ability to pay. Recently, WHO proposed that burden of expenditure on health care should be measured in relation to households' capacity to pay, which is measured by subtracting subsistence expenditures, i.e. expenditures required for food, minimal clothing and shelter, from total incomes or expenditures (Murray et al., 2000; WHO, 2000). And the level at which health care costs become catastrophic is set at greater than or equal to 40% of non-subsistence income/expenditure (Kawabata et al., 2002).

Households have various ways to cope with health care costs; some coping strategies are successful in dealing with health care costs without negative consequences on households, but some are not. A subjective measure, self-reported financial difficulties in paying medical bills, was employed by a few studies to indicate problems in the health care system (Hongvivatana and Manopimoke, 1991; Schoen et al., 2000). However, financial difficulties reported by respondents could vary from loss of savings, debts incurred, or loss of property. Hence, some financial difficulties reported by individuals may not be catastrophic, only events incurring consequences for households, such as reduction of household expenditures on other essential needs (i.e. food, education) over a period of time, would be catastrophic.

Both objective and subjective approaches were employed to define catastrophic expenditures. For the former, household cash income was employed to represent household economic status; arguments on whether income or expenditure should be chosen to represent household economic status are presented in Appendix 5. Cash income was simply assumed to represent household non-subsistence income. In addition, unadjusted per capita annual cash income was employed to represent individual capacity to pay since only household size is available in the database.

Total health expenditures caused by medical care and non-medical items were calculated by adding individuals' expenditures on ambulatory care in the previous month and hospitalization in the previous year with the estimated expenditures on ambulatory care for chronic conditions for the remaining months. Expenditures on ambulatory care for acute

illness were available for only one month, and it is not realistic to assume that individuals who had acute illness or injury in the previous month would have it every month. For expenditures on ambulatory care for chronic conditions, it was possible to estimate total expenditures for a year, but this was limited to only those having regular care, 55% of those with chronic conditions.

For the subjective measure, a direct question of, 'In last year, did you ever experience financial difficulty as a result of use of services?' was asked to all respondents, followed by subsequent questions on characteristics and reasons for the problem for those reporting financial difficulties.

Both quantitative and qualitative approaches were employed with the aim that these would complement each other; a household survey, in-depth interview with catastrophic cases, and focus group discussions. The survey was employed to define and calculate the magnitude in addition to the characteristics of catastrophic cases. A sub-sample from the survey, those reporting financial difficulties in paying medical care or having high burden of medical expenditure, plus cases selected from the provincial hospital and the pilot study, were selected for in-depth interview. The interviews aimed to understand why and how catastrophic payment existed in spite of the Universal Coverage scheme<sup>66</sup>. In addition, six focus group discussions among elderly people were added to supplement the few catastrophic cases identified. The focus group discussions aimed to clarify the process of decision-making on choice of care and strategies adopted to pay for health care among the elderly. Two groups of older people aged below and above 70 were conducted in three tambols: an urban area in the capital district, a rural area where a primary care unit (PCU) is located, and a village in a remote area.

---

<sup>66</sup> The original intention was to draw the sub-sample from the household survey for those with: catastrophic payment by area of residence, aged below and above 70, disability, and chronic conditions. However, there were not enough cases to meet the defined categories, so patients asking for fee exemption from the provincial hospital and cases from the pilot study were recruited to illustrate characteristics of the problem.

## **8.3 Results**

### **8.3.1 Magnitude of financial catastrophic events**

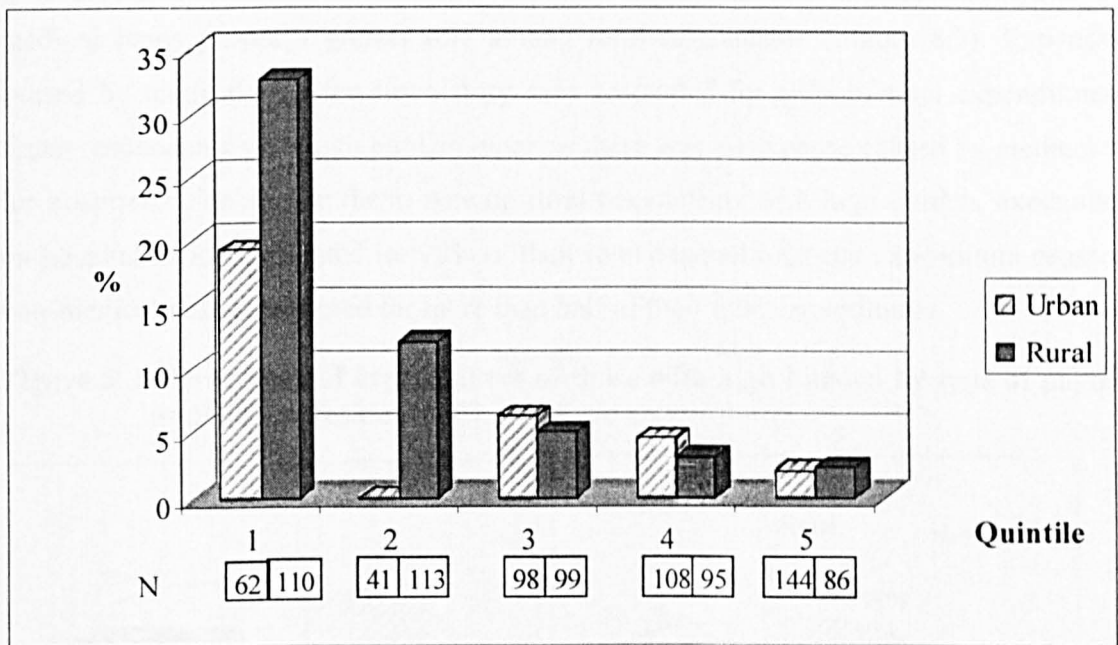
It was expected that individuals with a high burden of health expenditures, equal to or greater than 40% of per capita annual cash income, in general, would report financial difficulties. Area of residence was chosen as the main comparison, in addition to economic status, due to differences in care seeking behaviour and the cost of obtaining care between urban and rural areas.

#### **8.3.1.1 Objective measure of financial burden**

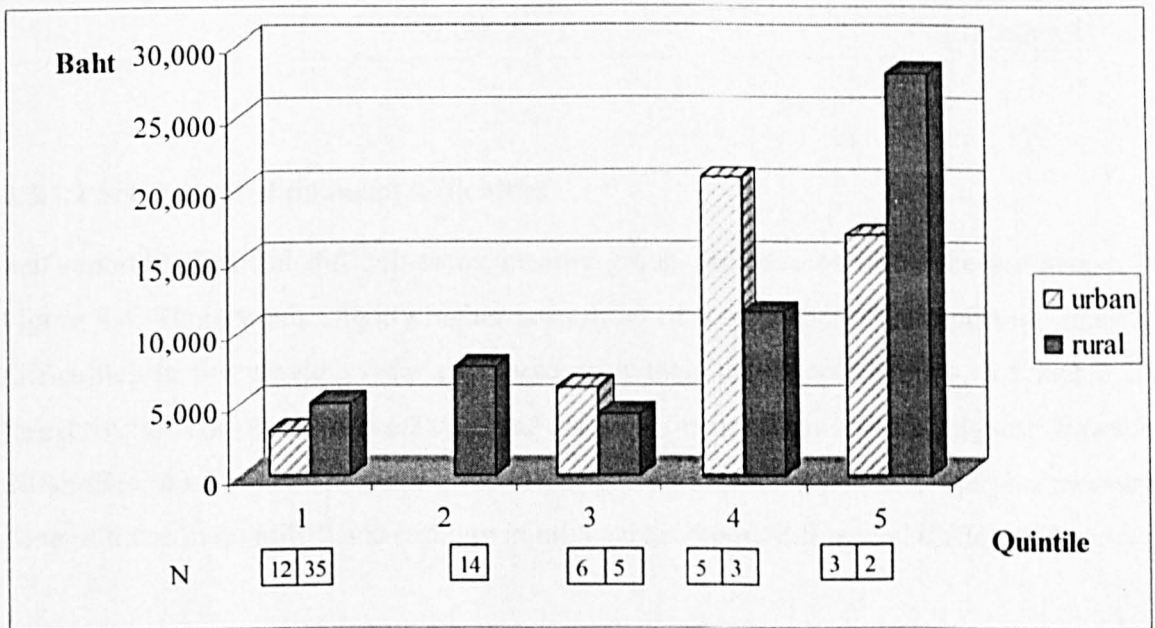
The distribution of respondents with expenditures greater than or equal to 40% of their per capita annual cash income is shown in Figure 8.1. Overall, 6 and 12% of respondents residing in urban and rural areas, respectively, paid out-of-pocket for health care in the previous year greater than or equal to 40% of their per capita annual cash income. There was a consistent gradient of burden of expenditures by income group; moreover, the high burden of expenditures was more prevalent among the poor in rural areas. Approximately one-third of those residing in rural areas and in the poorest quintile spent out-of-pocket on health care greater than or equal to 40% of their per capital annual cash income. It is worth noting that none of those in quintile 2 and residing in urban areas had a high burden of expenditure on health care; however, the sample size of those in quintile 2 was also the smallest. Mean out-of-pocket expenditures amongst those with high burden of health expenditure are shown in Figure 8.2. In general, the actual payments of those in the richer groups were greater than those of poorer groups. Mean total expenditure of those with high burden of expenditure in urban areas was 8,812 Baht, and 6,807 Baht for rural respondents. Mean expenditure of those in the poorest quintile was 3,200 and 5,200 Baht for urban and rural respondents respectively. There was no consistent different of the actual payment by area of residence.



**Figure 8. 1 Percentage of respondents with expenditures greater than or equal to 40% of per capita cash income by income group and area of residence**

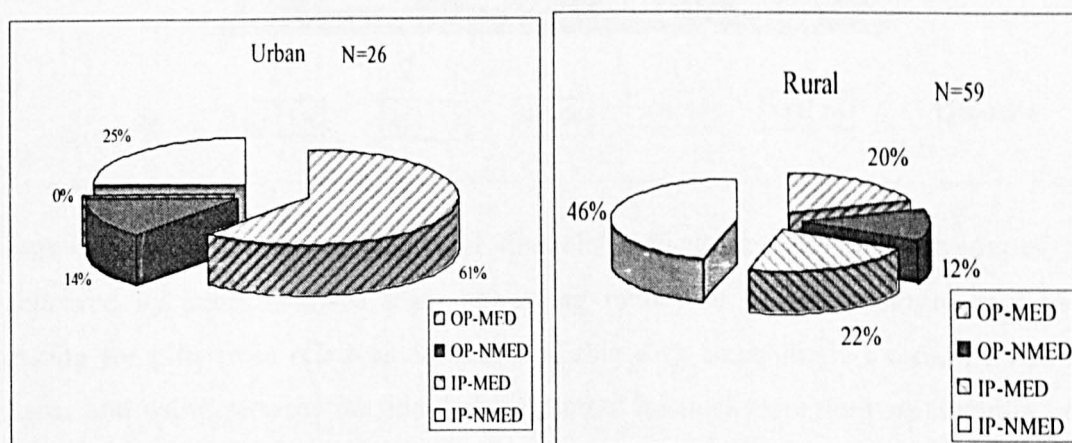


**Figure 8. 2 Mean expenditure of respondents with high burden of out-of-pocket payments by income group and area of residence**



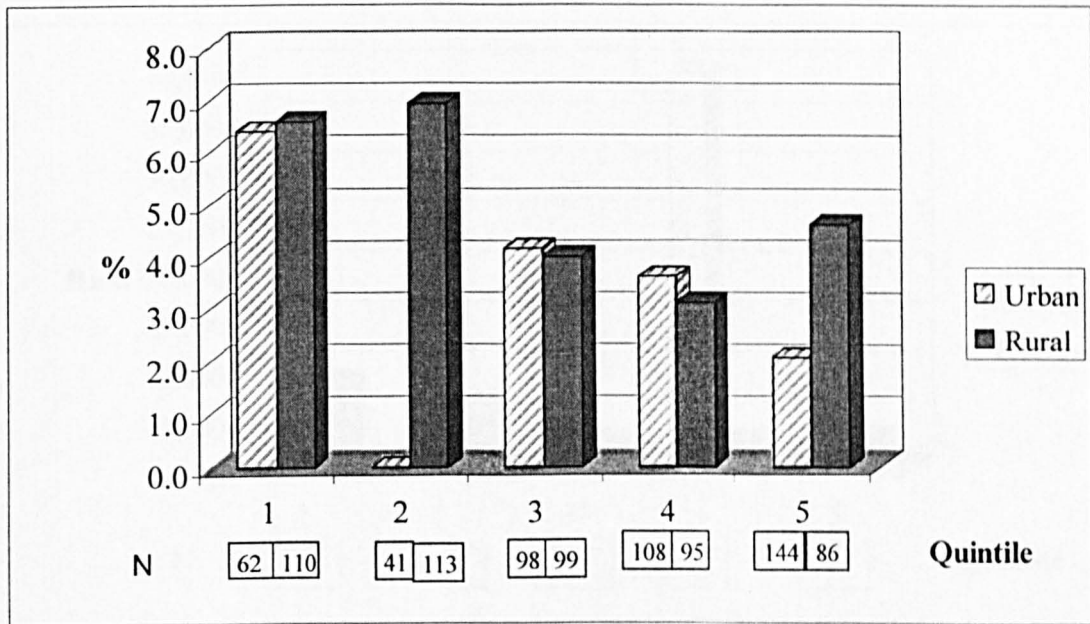
Expenditure on ambulatory care and that caused by medical care played a greater role among urban respondents, while expenditure on hospitalization and that caused by non-medical items played a greater role among rural respondents (Figure 8.3). Expenditure caused by medical care for ambulatory care accounted for 61% of total expenditures of urban respondents with high burden, whereas there was no expense caused by medical care for hospitalization among them. Among rural respondents with high burden, expenditures on hospitalization accounted for 70% of their total expenditures and expenditure caused by non-medical items accounted for more than half of their total expenditures.

**Figure 8. 3 Percentage of expenditures of those with high burden by type of payment and area of residence**



### 8.3.1.2 Self-reported financial difficulties

Self-reported financial difficulties by income group and area of residence are shown in Figure 8.4. There was a slightly higher proportion of rural respondents reporting financial difficulties in the previous year compared with their urban counterparts, 3.5 and 5.3% respectively. The poor, especially those in rural areas, reported the highest financial difficulties; however, there was no consistent gradient. Similarly to the objective measure, none of those in quintile 2 and residing in urban areas reported financial difficulties.

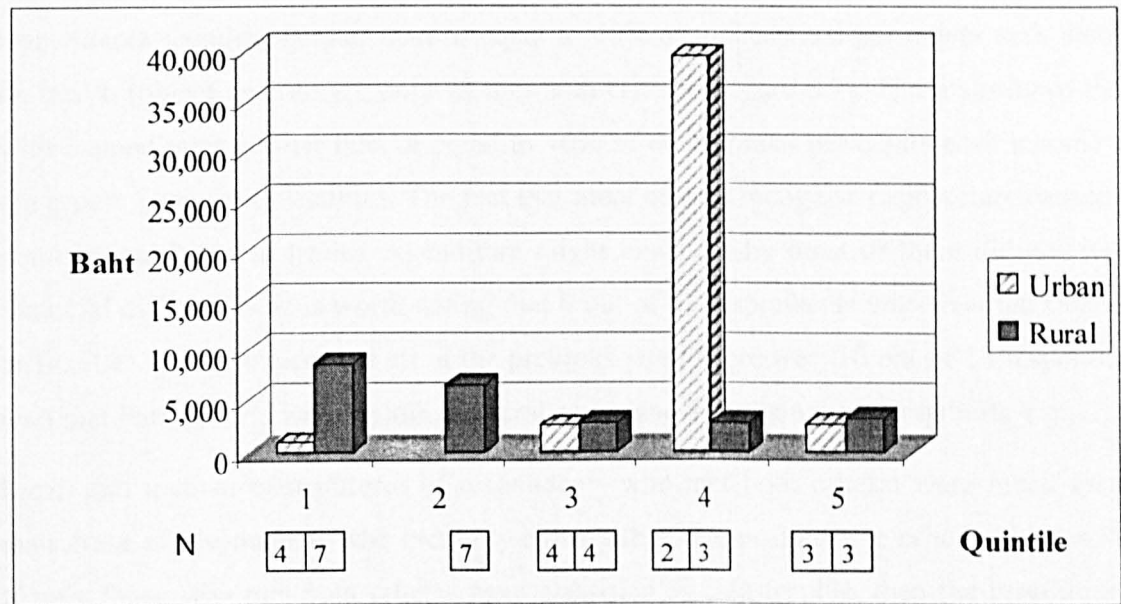
**Figure 8. 4 Percentage of respondents reporting financial difficulties by income group and area of residence**

The most common characteristics of financial difficulties reported were loss of savings, followed by debts incurred from borrowing money or getting a commercial loan, and asking for gifts from relatives or friends (Table 8.1). Expenditure caused by non-medical items and using services outside their registered hospital were the two common causes of their predicament. In addition, one respondent reported spending out-of-pocket due to lack of insurance coverage. There was no consistent gradient in mean out-of-pocket expenditure of those reporting financial difficulties by income group and area of residence (Figure 8.5). However, the number of respondents who reported financial difficulties was very small in each income quintile.

**Table 8. 1 Characteristics of the problem (%) by area of residence**

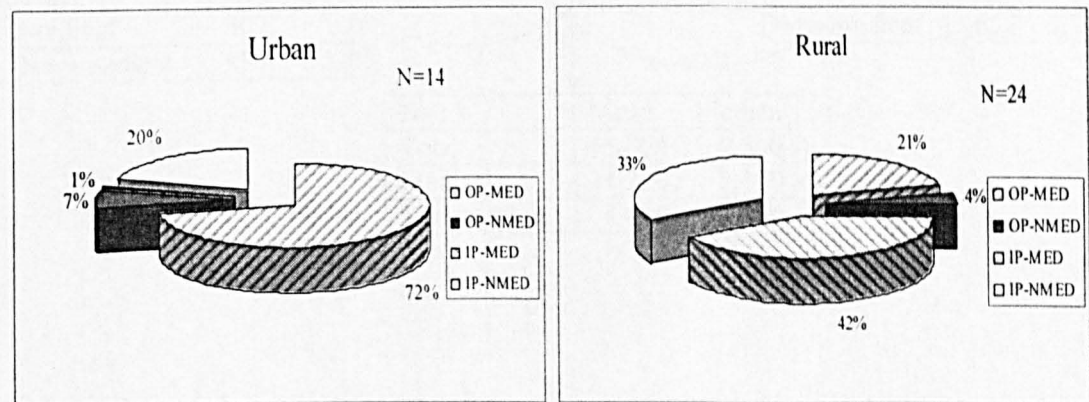
	Urban	Rural
N	16	27
Loss of savings	43.7	48.1
Asking for gift from friends/relatives	12.5	14.8
Borrowing money	12.5	22.2
Getting commercial loan	18.7	14.8
Others	12.5	0

**Figure 8. 5 Mean expenditure of those reporting financial difficulty by income group and area of residence**



The patterns of expenditure among those reporting financial difficulties were slightly different from those of the objective measure; expenditure caused by medical care was emphasized more compared with expenditure caused by non-medical items (Figure 8.6). However, expenditure on hospitalization still played a greater role among rural respondents while expenditure on ambulatory care played a greater role among urban respondents.

**Figure 8. 6 Percentage of expenditures of those reporting financial difficulties by type of payment and area of residence**



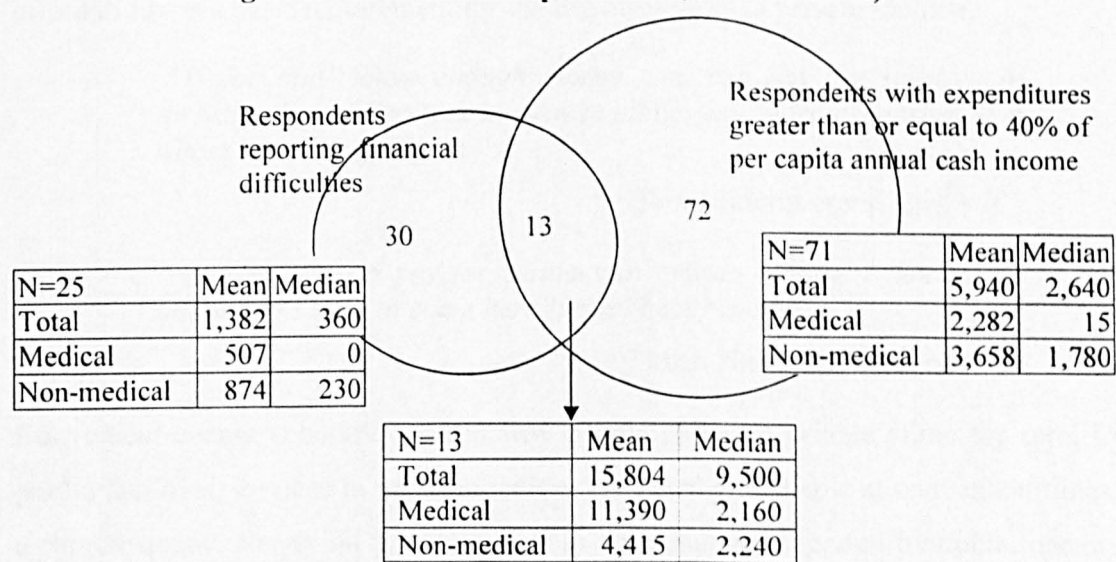


8.3.1.3 Comparing objective and subjective measures

Out of 43 respondents reporting financial difficulties (subjective criteria) and 85 respondents spending greater than or equal to 40% of their annual per capita cash income on health (objective criteria), only 13 met both criteria (Figure 8.7). The majority of those with expenditures greater than or equal to 40% of their annual per capita cash income did not report financial difficulties. The fact that most did not recognise expenditure caused by non-medical items as health expenditure might explain why most of them did not report financial difficulties. It is worth noting that 5 out of 43 respondents who reported financial difficulties had no expense at all in the previous year. Moreover, 10 out of 13 respondents who met both criteria were residing in rural areas, and 8 of them were in quintile 1 or 2.

Mean and median expenditures of respondents who met both criteria were much greater than those of respondents who met only either subjective or objective criteria (Figure 8.7). If only those who met both criteria were classified as catastrophic, then the magnitude of catastrophic events was reduced to only 0.6 and 2% in urban and rural areas, respectively.

Figure 8. 7 Mean and median expenditures of respondents with financial difficulties and high burden of health expenditure (40 % or more)



### **8.3.2 Reasons explaining catastrophic expenditure**

Results from the previous section show that the high burden of out-of-pocket expenditure came from expenditure caused by both medical care and non-medical items from the use of either ambulatory care or hospitalization. In this section, the reasons explaining the high burden of expenditure are explored.

#### **8.3.2.1 High burden of expenditure caused by medical care in ambulatory care**

A high burden of out-of-pocket expenditure caused by medical expenses was prominent among urban respondents. Expenditure data of those with high burden of expenditure in ambulatory care showed that use of private clinics for chronic conditions was the main explanation. If people choose to get care in private facilities, this implies that they are able and willing to pay for it, especially for care for chronic illness as they regularly use the services and know the price. Affordability of care may explain why most of them did not report financial difficulties, and the high burden among them was likely due to under-reported income, i.e. not including payments made by their child on their health care as incomes. Information gathered from the focus group discussions confirmed that affordability is a basic requirement for the use of services in private facilities.

*“If you don’t have enough money, you can not use services in private clinics. Services in private clinics are more expensive than those in public facilities.”*

(Rural elderly group aged <70)

*“... you have to pay for services in private clinics, I don’t have money so I have to come here (urban health centre).”*

(Urban elderly group aged >70)

Convenient access is another reason why people choose a private clinic for care. Unlike public facilities, services in private facilities are usually available at convenient times with a shorter queue. Nearly all private clinics in Yasothon are operated by public doctors and many of them open three times a day on working days, full day on Saturday, and half day on Sunday.

*“Private clinics are open on Saturday or Sunday.”*

*"It is convenient; clinics are close to our home and services are promptly provided without a long queue."*

*"It's more convenient, so people prefer to go there; people are willing to pay even though the price is a little bit expensive."*

(Urban elderly group aged <70)

Perceived better quality of drugs provided by doctors in private clinics is another reason; this is partly due to doctors' different prescribing behaviour at the public hospital compared with their own clinic. In addition, they are more responsive to patients' demands when working in their own clinic, such as responding to demands for injections.

*"When I ask for the same medicines as I got from his clinic, he told me to see him at his clinic."*

*"I think drugs at private clinics are imported while those in public hospitals are local products."*

(Urban elderly group aged <70)

*"If you would like to get an injection, you have to go to private clinics."*

(Urban elderly group aged >70)

*"When I went to see the doctor who I visited at the public hospital at her clinic, she gave me different drugs and told me that the medicines in her clinic are different from the others."*

*"The quality of drugs provided by private clinic is better than that provided by public hospital."*

*"A doctor in the public hospital asked me to see him at his clinic and he would give me a good quality drug."*

(Rural elderly group aged >70)

Box 1 illustrates how promptly a private clinic responded to a patient's needs, while a public doctor was inert to the patient need and did not provide enough information. In the case in Box 1, a patient went to see a doctor in one public hospital with a problem with her vision but did not receive enough information. Then she went to see a doctor in a private clinic and got an operation that incurred a high burden of expenditure.

**Box 1: Cataract case using service at a private clinic**

A 64-year-old widow lived alone in a rural village in the capital district. She had a son working in Bangkok, but he had not contacted with her for 7 years. She had three younger brothers staying nearby. She owned two small farmlands which were hired to others for crops and she got half of the rice produced as a rental payment. She occasionally worked as a labourer in crops during the harvest season. She owned an old, poor furnished house and few disposable goods. She was already covered by the UC scheme.

She got blurred vision in her left eye two years ago and went to see a doctor in the provincial hospital. She was informed by the doctor that her left eye was fine. She was advised by her relative to see a private ophthalmologist in a nearby province last year. At the clinic, she was told that she had a cataract in her left eye and it needed an operation. Then she got a day surgery for intraocular lens implantation (IOL) and spent 11,000 Baht for the operation and another 4,000 Baht for other expenses. The money she spent came from her savings and a low interest loan obtained from the community revolving fund.

Source: A case study from the pilot study

**8.3.2.2 High burden of expenditure caused by medical care in hospitalization**

Among those with a high burden caused by medical expense from hospitalization, non-compliance with the UC scheme's requirements for accessing free care was the most common cause, followed by benefits not covered, traffic accident, and informal payments in public hospital.

*Choosing a private hospital for hospitalization*

The reasons for those choosing a private hospital for hospitalization were not different from those choosing a private clinic or hospital for ambulatory care: affordability, perceived better quality and promptness of care provided by private hospital. However, the decision on where to get care, which is usually made by an individual for ambulatory care, is usually not made by an individual for hospitalization, especially for serious conditions as illustrated in Box 2.



**Box 2: Permanent chronic disabilities admitted in a private hospital**

A 72-year old widow lived in a rural village in Kham Khuan Kaeo district. She stayed with her daughter's family. The family owned a farmland for crops and earned about 30,000 Baht annually, apart from the products retained for in-house consumption. Her daughter had 2 sons who were working in Bangkok. All members in the family held a UC card.

She had pain in her knees for 2 years and received regular care from the provincial hospital without knowing exactly what the problem was. Her symptoms worsened until she was not able to extend her legs and walk. In September 2001, she was admitted at the provincial hospital with a fever. When the condition worsened after the fourth day of admission, the family decided to take her to a private hospital in a nearby province. She stayed in the private hospital for 4 days, her daughter spent 24,000 Baht for medical care and she was told that she had tuberculosis in both knees. The money spent for her care was sent by her grandsons who were working in Bangkok. Currently, she was getting TB drugs from a nearby health centre on a monthly basis.

Source: case study from sub sample of the survey.

Information from the focus group discussions among the elderly also showed that the decision on where they should get care when they are seriously ill is usually made by other members in the family, i.e. those who are breadwinners or the oldest child.

*"My consciousness was blurred when I woke up one morning. Then my children brought me to a private hospital and the doctor sent me for a computerized tomography scan in a nearby province."*

(Urban elderly group aged <70)

*"For minor illness, I decided where and how to get care, but when I was seriously ill, the decision was made by other members in the family."*

(Rural elderly group aged <70)

*"Once I had severe pain in my back and decided not to get care, but my son and grandsons took me to a hospital."*

(Rural elderly group aged >70)

### *Traffic accident injuries*

The Traffic Accident Insurance (TAI)<sup>67</sup> covers damage to health and lives caused by traffic accident injuries. The benefit package of the TAI includes initial payments without legal investigation and full payments after investigation<sup>68</sup>. Theoretically, all injured patients are covered by the TAI; however, as it is managed by various private for-profit insurance companies, it requires a complicated reimbursement process, i.e. underwriting, legal claim, etc.

Many injured patients and hospitals experienced difficulties in the reimbursement of payments. The UC scheme excludes traffic accident injuries from its benefit package since these are already covered by the TAI. However, it is not clear whether injured patients who are not able to claim the TAI will be covered by the UC scheme. The following case in Box 3 illustrates a case suffering from a traffic accident with a high financial burden.

#### Box 3: Traffic accident injury

A 63-year old man lived with his wife and one granddaughter in a village in Kud Khum district. His daughter, the mother of his granddaughter, regularly sent money to support the family. He used to work as a labourer in crops and just started working in his own land in 2002 when his daughter purchased some land for the family for crops.

In January 2002, he had an open wound in his right foot and two broken toes caused by a traffic accident. He was admitted at the provincial hospital for 2 weeks. He was not able to claim the traffic accident insurance due to expiry of the insurance. The costs of care were 10,000 Baht, but the family was not able to pay the full costs and asked for partial exemptions. Finally, he paid only 4,000 Baht for the care using the money sent by his daughter.

Source: case study from the provincial hospital

---

<sup>67</sup> This is a compulsory traffic accident insurance for car owners intended to cover damages to the health and lives of the second and third parties caused by the insured or uninsured vehicles.

<sup>68</sup> The TAI covers the damages up to the ceiling (first dollars); the initial payments of 15,000 Baht for health care and 15,000 Baht for life for all injured patients without investigation, and full payments up to 50,000 Baht after investigation.

*Informal payments in public hospital*

Theoretically, no payment is required for services covered by the UC scheme and many prostheses are already included in the benefit package, including artificial lens for Intra-Ocular Lens Implantation (IOL) operation. However, evidence from the survey revealed that artificial lens were not available at the public hospital. Information gathered from the focus group discussions and in-depth interviews with case studies confirmed this finding. The case study in Box 4 illustrates this problem.

**Box 4: High burden caused by artificial lens for IOL operation in public hospital**

A 77-year old man lived with his wife and one grandson in a village in the capital district. All his children lived away but two relative families lived next to his house. He owned a house and some durable goods. He was retired but his wife was working as a daily wage labourer in crops. All members in the family were covered by the UC scheme.

He had a vision problem for three years; his right eye was blind and the vision of his left eye was worsening. He went to see an ophthalmologist in the provincial hospital and was informed that he had a glaucoma in the right eye, which was already blind, and a matured cataract in the left eye. He was recommended an IOL operation for the left eye. He was informed that he could not use the UC card for the lens but it could be used for other costs incurred for the operation and medicines. He also would like his right eye operated on with the hope that it might be reversible. He was informed that if he purchased one lens he could get the second free of charge\*. He got operations for both eyes and spent 4,000 Baht for the first lens and 1,000 Baht for other expenses. The money spent on the operations came from his savings and borrowing from his relatives.

\* Free lens were supplied from two sources, the campaign for IOL operation launched by the Royal College of Ophthalmologists and one private organization.

Source: case study from sub sample of household survey.

Information gathered from the focus group discussions confirmed that informal payments for lens existed.

*"My husband used the UC card to get an eye operation in the hospital 3 months ago and we had to pay 5,000 Baht for one side of lens."*

(Rural elderly group aged <70)

*"I got an eye operation at the hospital and spent 5,000 Baht for the lens."*

*"The doctor said that I had to pay even though I used the card, but if I did not have the card I had to pay for other costs too."*

(Urban elderly group aged >70)

### **8.3.2.3 High burden of expenditure caused by non-medical items**

Spending caused by non-medical items for hospital admission was the most common cause of high burden among rural respondents with high burden of health expenditure and those reporting financial difficulties. There were three main reasons explaining this high burden of expense: expenditure on a private ward, frequent admission or long stay in hospital, and the relatively high expenditure on transportation and cost incurred by accompanying persons, especially among rural respondents. Data on use of private wards are not available as only aggregated expenditure was collected; however, if expenditures greater than 300 Baht<sup>69</sup> per day were assumed as stays in a private ward, then one-third of them might be those staying in a private ward. One-third of them were frequently admitted with the same conditions and a few of them stayed in the hospital more than 30 days in the previous year. For rural respondents, the costs incurred on families for hospitalization were usually greater than those of urban respondents, since they lived away from the hospital and had to spend not only for the patient but also for those accompanying the patient during their hospital stay.

### **8.3.3 Coping strategies and implications on households**

Financial transfer from children and household savings were the two main sources of finance to pay for either medical care or other items. Transfer money from children accounted for 60% of all episodes of either hospitalization or ambulatory care, and it was more common among those with high burden of expenses. Information from the case studies reveals the importance of financial support from children, especially when having high cost care. The case in Box 1 also reveals that older people without a child will be worse off as they have to rely on their own savings. It is common among Thais that young people have to repay their parents when they are getting old or when the family is in need, such as illness, funeral, priesthood ceremony etc. Information gathered from focus group discussions confirmed this.

---

<sup>69</sup> The rate for a private room including meals in public hospitals was, on average, 300 Baht / day.

*"When I was ill, my child paid for it. For those without a child, they have to pay from their savings."*

(Urban elderly group aged <70)

*"When I was seriously ill, I phoned my son who was working in Bangkok and asked him to send me the money, and he did."*

(Rural elderly group aged <70)

*"When I had an eye operation, my daughter sent me 5,000 Baht to pay for the lens. If my daughter had not supported, I would not do it."*

(Urban elderly group aged >70)

*"When I had an abdominal artery operation a few years ago, my daughter sent me 50,000 Baht to pay for the operation and other costs."*

(Rural elderly group aged >70)

Asking for fee exemption from the hospital is another means to cope with the costs of care. Those who are not covered by any insurance and not able to pay the fees can ask for partial or total exemption; this will depend on the assessment made by a social worker in the hospital. The case study in Box 3 revealed the importance of hospital exemption in relieving the burden of expenditures for services not covered by the UC scheme.

Among 13 respondents with high burden of expenditures and reporting financial difficulties, 5 respondents reported loss of savings, 3 of them reported getting a commercial loan, and the other 5 reported receiving gifts, borrowing money, and others. Considering all these conditions, loss of savings and borrowing money from friends might not be catastrophic, but getting a commercial loan probably was. Focusing on the three who reported getting commercial loans, two of them are the case studies in Box 2 above and Box 5 below. In the survey the case in Box 2 reported getting a commercial loan to pay for care, but transfer money from her grandsons was reported when the family was revisited and re-interviewed by the researcher. The case in Box 5 did get a commercial loan, but the primary objective was for crops, not for care, and he only used the remaining money to pay for care; in addition, this case also emphasizes the importance of family support. The third case reported financial difficulties, but information on illness and service utilization was inconsistent with the report.

Obtaining a commercial loan to pay for care was relatively rare since it requires collateral, and family support is widespread. Only those who have assets such as land or valuable goods are able to get a loan; the poor are not able to do so.

*"Only those who have collateral can get a loan."*

(Urban elderly group aged >70)

**Box 5: Heart disease with frequent use of services from various places**

A 65-year old man lived with his wife and one granddaughter in an urban community in Kham Khuan Kaeo district. His daughter who was staying nearby looked after them and provided daily support. His son who was working in Bangkok sent him regularly 2,000 Baht a month. The family owned farmland and earned about 30,000 Baht annually apart from rice retained for in-house consumption. He got a commercial loan from a bank for crops last year. They were all covered by the UC scheme.

He had a heart disease that required regular care. He got care from 3 different sources for different conditions: the district hospital, a private clinic in the capital city, and a private clinic in the district. The money spent on his regular care came from his savings (and money remaining from the loan). He had three admissions in the previous year. He used the UC card in the first admission; he was admitted in the district hospital then referred to the provincial hospital. Only one day after discharge, his condition was worsening so his son took him to a private hospital in the province and his daughter spent about 20,000 Baht for the care. In the third admission, he was referred to a nearby regional hospital from the district hospital. His daughter spent 1,000 Baht for a special x-ray outside the hospital and all other medical care costs were covered by the UC card.

Source: case study from sub sample of the survey.

In general, no serious implications of the high burden of expenditure or coping strategies on individuals or households were identified. Moreover, getting a loan in some circumstances may not be catastrophic but is used just to postpone payment, such as the example in Box 1.

## 8.4 Discussion

### Summary of findings

In general, 6 and 12% of respondents residing in urban and rural areas, respectively, spent out-of-pocket greater than or equal to 40% of their per capita annual cash income on health care. The high burden of expenditures was prevalent amongst those who were poor and residing in rural areas. Expenditure caused by medical care for ambulatory visits was the main reason among urban respondents, while expenditure on hospitalization and caused by other items played a greater role among rural respondents. The magnitude of catastrophic

expenditure was reduced to only 0.6 and 2% amongst urban and rural respondents, respectively, when self-reported financial difficulties were taken into account, together with the criterion of spending greater than or equal to 40% of their per capita annual cash income. The greater prevalence of catastrophic cases amongst the rural poor remained when both criteria were applied, however.

Perceived better quality of care, convenient access, greater responsiveness of doctors in private clinics, and affordability of care explained why some elderly used private clinics for ambulatory care. The high burden caused by medical care for hospitalization arose from the use of private hospitals, admission caused by traffic injuries, and informal payments for artificial lens. It is worth noting that the decision on where to get care for hospitalization was usually not made by individual elderly, but by their children. Expenditure caused by non-medical items also played a crucial role, especially among those in rural areas. Staying in a private ward, frequent admission, a long stay in hospital, and the high cost of obtaining hospital care for rural respondents explained the high burden caused by other items.

Family support was common in paying medical bills and other items for the elderly. In addition, hospital fee exemption played a role for those who were not covered by insurance and were not able to pay the fees. Serious implications for individuals or households due to the high burden and coping strategies adopted by them were not found in the survey or interviews.

### **Methodological issues**

In the measurement of catastrophic expenditure, difficulties were experienced through the under-reporting of health expenditures or household income. Under-reporting of health expenditure was mainly due to the difficulties of obtaining full annual expenditure on ambulatory care. Reported expenditures for acute illness care were available for only one month, and annual expenses for chronic conditions could be estimated for only those having regular care. However, since the majority of illnesses amongst respondents were chronic conditions, and higher burdens of expenditure were most likely amongst hospitalized respondents or frequent users, capturing total expenditures on hospitalization and chronic conditions would already capture the majority of those with high burden of expenditure.

Measuring income was more problematic both in terms of its operational definition and application, resulting in underestimation of household incomes. Assuming cash incomes as non-subsistence income is likely to fit those residing in rural areas, since the majority of them are farmers and they normally retain enough products for in-house consumption before selling any surplus. However, the assumption may be problematic for those outside the agricultural sector as the incomes reported by them might represent their total gross incomes. Therefore, assuming cash income as non-subsistence income would overestimate the incomes of urban respondents and underestimate their burden of expenditure. Nevertheless, this problem might be less problematic due to the relatively high level of income among the richest group. Underestimation of income is more problematic; some transferred money, such as payments made by children on their parent(s) care, may not have been recognized as income. This is partly due to the weakness of questionnaire design. Underestimation of income by excluding in-kind income would result in overestimation of burden of expenditure, particular among those in the agricultural sector who were poor. All these limitations should be kept in mind when interpreting the data.

The subjective measure of burden was expressed in relation to an individual's expectation, which will vary from individual to individual and thus their reporting of the extent of their difficulties varied. On comparison with the objective assessment, results show that many of those reporting financial difficulties did not have high burden of expenditures. Recall errors and lack of information on acute care expenditure for the whole year might account for those without expenditure reporting financial difficulties. It might also be possible that catastrophic events reported by individuals were due to the illness of other members in the family or occurred to the individuals prior to the study period. Information errors provided by respondents or interpreted by interviewers was another problem. For example, the case in Box 5 reported getting a loan and the case in Box 1 reported selling land to pay for health care; however, when they were reinvestigated by the researcher, it was found that while both events did happen, they were not directly related to their illness. The case in Box 5 got a commercial loan from a bank for crops and used the money remaining to pay for medical care. The case in Box 1 sold her land many years ago and used the remaining money to pay for medical care. Thus while the subjective measure was confronted with recall errors, the objective measure was confronted with underestimation of either



expenditure or income. Thus employing both criteria to complement the weaknesses of each other should provide a more valid and reliable result.

The study struggled to identify and recruit catastrophic cases for the case studies. The initial plan put emphasis on only those with high burden of expenditure caused by medical care, because the UC scheme covers only medical care costs. However, evidence from the quantitative study showed that this was a mistake since there were many cases of high burden caused by non-medical expenditures. As only a limited number of cases of high burden of expenditures caused by medical care could be identified, cases from the provincial hospital and the pilot study were added and complemented with focus group discussions. Employing both case studies and focus group discussions worked well; they complemented each other.

The small sample size is another problem in sub-group analyses and may explain why there was no catastrophic event found among urban elderly in quintile 2.

### **Discussion of findings**

#### *Magnitude of catastrophic events*

The fact that no financial difficulties were reported by the majority of those with a high burden of expenditures raises the question of whether they really experienced catastrophic events, and if they did, what could explain this incongruity. The main reason is probably the under-reporting of income by not including their children's expenses on their health care as part of their income; this relieved the burden of expenditure so no negative consequences were incurred by individuals or households. Evidence from nearly all case studies revealed the importance of financial support from children among those experiencing high cost care. If we believe that those with catastrophic expenditure would realize their problem and report financial difficulties, then only 15% of those with high burden of expenditure were catastrophic and the magnitude of catastrophic events was minimal. However, it was unknown where their children got the money from and whether the financial difficulties were simply transferred from the elderly to their children. It is possible that they borrowed the money or got a commercial loan in order to support their family.

Comparing results from this study with a study of rural households in 1991 (Hongvivatana and Manopimoke, 1991), even though this study focused on older people and was conducted in the poorest province, financial difficulties reported by the elderly were much lower, at 4% compared with 13% in the 1991 study. This suggests that having insurance reduced a substantial proportion of those facing financial difficulties. However, to what extent this can be attributed to the UC scheme is unclear since there was no evidence prior to the UC in this province for comparison; moreover, the majority of older people were already covered by the MWS before the UC scheme.

Even though the majority of those with catastrophic expenditure were the rural poor elderly, their level of payments was much lower than that of the richer groups. This suggests that the high burden of expenditure among the poor was partly due to their extremely low income.

### *Reasons for high burden of expenditure caused by medical care*

Non-compliance with the requirements of the UC scheme for accessing free care was the main reason explaining the high burden of expenditure caused by medical care. People who use private care as their regular choice for ambulatory care generally know the price and are willing and able to pay for it. This would explain why most of them with high burden did not report financial difficulties, and the high burden was likely due to underestimated income as mentioned earlier. The greater use of a private hospital for admission of rural elderly probably occurred because they were less well informed than urban respondents of the quality differences between private and public hospitals<sup>70</sup>, and this resulted in the high burden of expenditure. Furthermore, urban dwellers may be better able to negotiate access to care at public hospitals.

A major concern is the high burden of expenditure caused by medical care among those complying with the UC requirements for accessing free care. The Traffic Accident Insurance Act was enacted in 1992 in order to protect people from damage to their health and lives from road traffic accidents; it is supposed to cover expenses for health care and

---

<sup>70</sup> The private hospital was small and did not meet the standard set by the UC scheme so it was not recruited as a main contractor.

compensation for death or major disabilities arising from a traffic accident. The study finding of catastrophic expenditure caused by traffic accidents suggests that the TAI scheme fails to protect injured persons as stated by law. The complicated claim process leads to underutilization of the scheme; the proportion of traffic-accident patients in public hospitals claiming for damages to health from the TAI ranged from only 19–63% (Limwattananon, 2001). The loss ratio<sup>71</sup> of the scheme was, on average, 40% during 1993–1998. Underutilization of the scheme causes financial difficulties for either the hospitals or the injured patients since the costs of care for traffic accident injuries are usually high. Public hospitals have to exempt the fees for patients when they run out of money or are not able to pay the fees. However, this problem remains only among UC beneficiaries, not SSS or CSMBS beneficiaries. The SSS disallows contracted hospitals from directly billing SSS beneficiaries while the CSMBS reimburses all medical bills for its beneficiaries<sup>72</sup>. Duplication of the coverage of traffic accident injuries by insurance schemes results in inefficiency of the system and benefits private insurance companies. This problem reflects the need to reform the payment mechanism of the TAI scheme and for better coordination between schemes.

Informal charges for artificial lens were identified in this study for cataract surgery as it is a major problem among older people. However, informal payments for childbirth or elective surgeries exist in Thailand and are generally known among the people. This is an additional source of income for specialists in public hospitals to compensate for the low salary in the public sector. In an informal discussion, a physician in the Royal College of Ophthalmologists estimated that one-third of ophthalmologists sell lens in public hospitals. An informal payments system will have implications on either efficiency or equity; it distorts the allocation of resources away from the social optimum and introduces a price barrier to service in much the same way as an official payment or privately marketed service (Ensor, 2004). Informal payments will be a major obstacle to the effective financial

---

<sup>71</sup> The ratio of payments made by insurance companies to the premium collected.

<sup>72</sup> CSMBS beneficiaries have to spend out-of-pocket for ambulatory care and reimburse from the CSMBS, but for inpatient care, the hospital directly reimburse from the CSMBS.

protection role of the UC scheme unless the current payment system to providers is reviewed.

*Reasons for high burden of expenditure caused by non-medical items*

High burden of expenditure caused by non-medical items was more prevalent among those residing in rural areas and hospitalized respondents. This was due to the relatively high cost of obtaining care from hospital for the rural elderly. Frequent use of free hospital care for a chronic condition among rural respondents is costly, especially among those with limited physical mobility since they may need private transportation. In addition, once a member in a family is hospitalized, the costs incurred are not just those to the ill individual, but also those to the accompanying persons. However, the details of expenditure caused by other items were limited and further research is needed on this particular issue.

*Coping strategies: the role of intergenerational and hospital support*

Individuals have different ways of coping with health care costs depending on what resources, either intra-household or inter-household, are available to them. In general, household savings are usually the first source for coping with the costs incurred from illness and services used (Sauerborn et al., 1996). As this study focused on older people who have low disposable income, then intra-familial transfer was more popular, especially for high cost care. Repaying parents is generally viewed by Thais as a continual obligation that starts when the child is old enough to provide meaningful help, and commonly begins long before parents reach old age (Knodel et al., 1999). The care and support provided by children when their parents are too old to take care of themselves is viewed as the culmination of this process.

Results from this study reveal that strong family support is a safety net for the elderly, especially when they face high cost care. The main source of finance for out-of-pocket payment was either co-resident or non co-resident children. In the province, there was at least one member in most households, especially those in rural areas, working in Bangkok or elsewhere, either permanently or temporarily. Working abroad, such as in Taiwan, is also common in some villages in Yasothon. This is an important source of finance when the elderly are in need. Information from all case studies reveals the importance of intra-familial transfer. Older people who do not have children are the worst off since they have to

rely on their own savings or assets, especially when facing unexpected high expenses. Although the government already provides living allowances for the indigent elderly, this is limited to only a subsistence level and targeting problems remain.

An exemption policy in public hospitals for those uninsured, known as type B exemption<sup>73</sup>, has existed in Thailand since the introduction of user fees in public facilities. Type B exemption played a substantial role in the past for the uninsured; more recently, it has had a declining role in light of the expansion of insurance coverage. Expenditures caused by type B exemption accounted for 25% of total exemptions in public hospitals<sup>74</sup> in 1995 (Health Insurance Office, 1997) and declined to 11% in 2001 (Health Insurance Office, 2002). The case in Box 3 indicates that fee exemption by sliding scale for those unable to pay the full bills in the provincial hospital still plays a role as a safety net in spite of the UC scheme. The need for an exemption policy despite the UC scheme is illustrated by the incompleteness of the benefit package, e.g. excluding traffic accident injury, and the bypassing of registered hospitals because of hospitals' varying capabilities.

### 8.5 Conclusion

Identifying catastrophic cases was confronted with limitations of both income and expenditure data, in addition to the rarity of the condition.. Recruiting catastrophic cases, which are rare events, from the household survey, proved difficult. In order to obtain in-depth understanding of catastrophic events, selecting cases from tertiary hospitals, such as centres for heart surgery or cancer, would be more appropriate. However, employing subjective and objective measures in addition to combining quantitative and qualitative approaches made it feasible to explore such a complex issue and they complemented each other quite well.

The magnitude of catastrophic events was low when both objective and subjective measures were employed. However, the greater proportion of catastrophic expenditure

---

<sup>73</sup> Type B exemption is an exemption policy by sliding scale in public hospitals for those who are not covered by any insurance scheme and are not able to pay for the fees.

<sup>74</sup> Total exemption in public hospitals included free medical care provided to those under the MWS (the poor, children under 12, secondary school students, elderly persons, disabled, veterans, monks, community leaders and health volunteers and family) and type B exemption.

among rural elderly suggests that the UC scheme probably provided a greater protection for urban elderly. However, the relatively high cost of obtaining hospital care for rural elderly and the extremely low income amongst them also played a substantial role in the explanation. The high burden of expenditure caused by medical care among the elderly was mainly due to not complying with the scheme, which was the result of choices made by individuals. Uncovered benefits and informal payments were also catastrophic, especially for the poor; these problems are not confined to the elderly but also affect other groups and provinces, since they are problems within the system and could therefore apply to all provinces. This calls for reform of the payment of the TAI and provider payment in order to enhance the insurance function of both schemes. Expenditures on non-medical items played a substantial role among those with high burden; however, only limited information was available and further research is needed on this issue. The limited number of catastrophic events among the elderly and few implications for households were explained by strong financial support from their children and the exemption policy in public hospitals.

## **CHAPTER 9: DISCUSSION**

### **9.1 Introduction**

The thesis set out to explore how effectively the UC scheme was implemented and performed its two basic functions, enabling access to care and financial protection for the elderly. The conceptual framework for the study was developed by integrating the Andersen Behaviour model, the Organizational Constraints model, and the descriptive framework for policy analysis of insurance functions. The framework of the Andersen Behaviour model was adopted to assess factors explaining service utilization among the elderly, and use of services is defined as equitable if it is explained mainly by need factors. The other two frameworks were adopted to assess UC scheme implementation and provider responses. The concept of vertical equity was employed to assess equity in the finance of health care. This chapter discusses some strengths and weaknesses of the methods adopted, summarises and discusses the findings in terms of policy implementation and impact on access and financial protection for the elderly.

### **9.2 Methodological and data issues**

The study employed both quantitative and qualitative approaches in order that they would complement each other. The quantitative approach, household survey, aimed to provide a snap shot of the performance of the UC scheme in terms of enabling access and financial protection for the elderly. The qualitative approach, in-depth interviews and focus group discussions, aimed to explain how and why the current situation existed. Methodological and data issues relating to each approach will be discussed first, followed by broader issues relating to the study.

#### **9.2.1 Household survey**

##### *Strengths and weakness of study design*

The household survey had several major strengths. In general, the survey data probably provide an accurate snapshot of individual elderly across the province. This results from: the wide scope of the survey (individuals in 48 villages/area blocks); the random selection

of both villages and individuals; extremely low rate of non-participation; and the reliability of information provided by respondents. Findings from the household survey also provided useful information for the researcher to further explore the problem, for example the finding of informal payments for artificial lens in IOL operation.

However, the wide scope of the survey had some costs to pay. Dispersion of sampling units (clusters) required more resources and time for the survey. Moreover, the limitation of time required that survey teams moved on during the day and absent samples were immediately replaced. This resulted in an over-representation of women in the survey; however, the lack of difference in sex distribution by area of residence suggests that this was not problematic. Moreover, the study did not intend to estimate overall utilization in the population, but to compare the difference in service utilization between urban and rural, and amongst economic groups. As the samples were drawn from sampled clusters, not the population, then it increased standard errors or decreased the precision of population means. Moreover, samples drawn from the same cluster may not be independent from each other due to the similarities in socioeconomic conditions, beliefs, life styles etc. This problem could be addressed by taking clustering effects into account in the analysis, however.

The small sample size for sub-group analyses was one limitation of the study. The sample size was calculated based on the comparison of service utilization between those residing in urban and rural areas. This inevitably limited the sample size for sub-group analyses. For example, the sample size of those in quintile 2 and residing in urban areas might be too small to capture catastrophic events which are generally rare.

The two greatest problems with the household survey were measuring household economic status and measuring health expenditure.

#### *Measuring household economic status*

Only household cash incomes and expenditures were collected, not total incomes or consumption; therefore, both were underestimated. The complexity of living arrangements and support in Thai society exacerbates the difficulties in measuring household economic status. Many households, especially those in rural areas in the Northeast, have at least one member in the household working either temporarily or permanently elsewhere. Many of them send money back to support their parents, especially when they are in need. People



generally recognise transfer money from their child for their daily living as their income, but they may not recognise expenditures on their health care by a non co-resident child as their income. The lack of difference in either household income or expenditure between the survey and the re-interview suggests that the underestimation of income or expenditure was probably due to the problem of operational definition of income employed in the study.

Comparing income and expenditure with assets, and considering the low correlation between per capita cash income and expenditure quintiles, suggests that misclassification existed in both approaches (Appendix 5). Income was less likely to be over-reported, but under-reporting income, either intentionally or unintentionally, might be possible. On the other hand, some respondents might report expenses over the actual amount in order to illustrate that they were not rich and had a large burden to carry. Selecting income or expenditure to represent household ability to pay will have different implications on the measurement of equity due to the greater skewness and kurtosis of income distribution compared with expenditure. Moreover, the policy implications according to misclassification from rich to poor (income based measure) or poor to rich (expenditure based measure) are quite different. For example, those who had high household expenditures in contrast to their incomes would be assigned to richer quintile groups if an expenditure-based measure was employed. Then less inequity in out-of-pocket payment would be expected if an expenditure-based measure was employed compared with an income-based measure. Per capita income was not adjusted by an adult equivalent scale in ranking the economic status of individuals; this would underestimate the income of households with greater proportions of children and elderly persons and especially might underestimate the per capita income of the poor since they usually have large families but fewer working adults.

Comparing the level of income of this study with that of the 2002 Socio-economic survey (SES) and the proportion of expenditure on food in the SES, suggests that cash income from this study might reasonably represent non-subsistence income. The assumption was likely to fit those residing in rural areas since the majority of them were engaged in the informal sector. However, this would probably overestimate incomes of those outside the agricultural sector, since their incomes might represent total gross incomes and the assumption would result in underestimation of their burden of out-of-pocket expenditure.

However, even if the level of income of those in the poorer quintiles was marked up by 40%, the vast difference in the level of income between the richer groups and the poor remained.

Under reporting of income would lead to overestimation of the burden of expenditure on health care and result in inaccuracy of the absolute level of burden of expenditure. Thus it is essential to check consistency of results across indicators: income, expenditure, and a non-cash indicator. Since the aim was to quantify level of burden and degree of inequity of out-of-pocket payment, a non-cash indicator was not chosen as a primary indicator, but was employed for triangulation purposes in analysing service utilization. Consistency of results across indicators would increase the internal validity of the results. Similarly, incorporating self-assessed financial difficulty caused by medical expenditure with the quantitative measure can allow for the potential biases of both measures and check the validity of the results.

#### *Measuring expenditure on health care*

Capturing not only expenditure caused by medical care but also the tangible cost of obtaining care is strength of this study. Estimation of total annual expenditure on health care for each income group could be done without difficulty, but estimation of individual annual expenditure on ambulatory care was problematic. However, total individual expenditures on hospitalization and chronic conditions were captured, and would include the majority of those with a high burden of expenditure.

Lack of detail on expenditure caused by non-medical items was a weakness in the measurement of health care expenditure. Only aggregate expenditure was collected and this limited the capability of the study to explore the reasons why a few respondents faced catastrophic expenditure caused by non-medical items.

#### **9.2.2 Qualitative interviews**

The qualitative approach provided very useful information for in-depth understanding of particular events, for example why and how providers responded to the UC scheme or the reasons explaining catastrophic payment. The approach is concerned with answering questions such as “what is x and how does x vary in different circumstances, and why?”

which could not be answered by a quantitative approach. Understanding the problems well makes it possible for policy makers and health administrators to tackle the problem effectively.

The qualitative approach also provided some flexibility in reaching informants, for example supplementing the few catastrophic case studies with focus group discussions among older people. The study planned to conduct in-depth interviews with a sub-sample drawn from the survey for catastrophic events; however, only a limited number of cases of high burden of expenditure on medical care could be identified, so cases from the provincial hospital and the pilot study were added and complemented with focus group discussions. The use of both in-depth interviews with individuals and focus group discussions revealed that they worked well together and complemented each other. However, lack of knowledge on quality of care amongst the elderly and their limited expectations might affect the information provided by them, for example, whether they were likely to perceive whether financial constraints faced by the provincial hospital affected its quality of care.

The position of the researcher in the MOPH might be a potential cause of bias in the information collected from health administrators, managers, and providers. However, as a technical adviser, the researcher and the participants could openly share information relating to the UC scheme. In addition, not having any involvement in UC policy implementation, the researcher could keep a neutral position in this matter. Even though this problem might remain to some degree, health administrator and managers were frank in saying that a strong message from the Minister, 'Do not have problems', made them not promote the use of call centres, so it is unlikely that they were unwilling to be frank on other matters with the researcher. However, employing specialists from the provincial to provide care in PCUs appeared to lead them over state negative consequences on this policy; in addition, they were less likely to say that they provided less care for the patients according to the low payment of DRG. Nevertheless, the fact of information bias provided by specialists is less likely due to the position of the researcher. Selection of elderly participants for the focus group discussions by health workers might be another potential bias; however, including a number of informants of different age group, previous insurance status, and area of residence made it possible for the study to cross-check information gathered from them and other sources for validity and reliability (triangulation).

### 9.2.3 Broader methodological issues

Limiting the study to only one province made it possible to go into some depth in investigating the scheme outcomes, design, management, context, and interrelationships between these. In addition, focusing on the elderly enabled the study to investigate problems relating to access and financial protection for them; for example, the importance of family support for the elderly, impact of the establishment of PCU on access to care for the elderly, and reasons explaining catastrophic payment. Other studies evaluating the UC policy (Pannarunothai et al., 2002; HSRI, 2003) have explored only broader issues for the general population, i.e. coverage of insurance, service utilization, and take-up rate of the UC scheme; they were not able to go into the same depth as this study.

Employing a variety of methods made it possible to cross-check the findings from one method with a second method (triangulation). For example, together the household survey and information from focus group discussions provided strong evidence of informal payments for artificial lens. Similarly, information from focus group discussions and reports showed that access to and use of care at health centres was increased substantially. Consistency of information across methods added greatly to the internal validity of the study.

Employing a variety of methods also made possible more in-depth investigation of the problems. For example, in-depth interviews with elderly people who had the intra-ocular lens (IOL) operation made the researcher understand why some of them faced catastrophic expenditures. Information gathered from focus group discussions emphasized the importance of familial support and explained why some respondents with high burden of expenditure did not report financial difficulties. Information gathered from focus group discussions with the elderly also complemented the few case studies quite well.

However, some weaknesses of the study are identified. Lack of knowledge of the pre-UC situation in the province is a main limitation of this study. To what extent the existing situation of access and financial protection for the elderly are attributable to the UC scheme is unknown. Moreover, free medical care for the elderly already existed before the UC scheme even though it did not cover all. Focus on the elderly only also limited the extent to which the study might pick up whether the UC policy crowded out the elderly from service

use and favoured the young, since detailed comparisons between age-groups were not done. Assessing service utilization in aggregate and general terms inevitably limited the ability of the study to assess specific care for specific needs of the elderly. Lack of information on intensity and quality of care limited the ability of the study to identify whether financial constraints at the provincial hospital had implications for care for the elderly.

Confining the study to only a province inevitably limits generalisation of the findings, at least in some aspects due to differences in the context and management between provinces. Findings specific to the context of the province may not be generalized. For example, the study province gained a greater budget with UC but was short of physicians, so the financial impact on providers and their responses were likely to be different from provinces where there was shortage of budget but excess staff. Implications for the elderly in terms of access and financial protection between such provinces may also be different. Nevertheless, the findings could be generalized to most northeast provinces due to their similar contexts, i.e. low socioeconomic status and low number of staff in relation to population. Problems relating to poor preparation for policy implementation due to rapid implementation, i.e. lack of management capabilities and mismatch of resources, were likely to be similar in all provinces. Moreover, problems relating to poor preparation for policy implementation were likely to be more in provinces outside the HCR or SIP projects. Problems relating to system design and fraud, i.e. informal payments and out-of-pocket payment for traffic accident injuries, were likely to be similar in all provinces, and so could be generalized.

### **9.3 Summary of findings**

This section summarizes the overall findings from chapters 5-8, starting from policy implementation and provider responses and implications for the elderly in terms of service utilization and financial protection.

#### **9.3.1 UC scheme implementation and provider responses**

##### *Policy implementation and constraints*

Providing insurance coverage to all elderly was generally agreed with by all health workers. However, many of the elderly in the focus group discussions viewed it as a government welfare, which should be provided only to those who were poor. The coverage of beneficiary registration was nearly 100% of eligible elderly, but a few of them reported inconvenient access to their registered hospital, especially those residing in rural areas.

The per capita budget allocation and the exclusive payment model adopted by the province were generally accepted by providers; however, the low payment rate for inpatient care was criticized by those in the provincial hospital. The main constraint on implementation was poor preparation of the system. A lack of necessary management capabilities and skills of the PHO to perform active purchasing functions was identified, particularly information on quality of care, monitoring system, and regulation. Information, education, and communication for beneficiaries was also not actively performed by the PHO.

Establishment of PCU was generally accepted by most providers and the elderly, with the exception of specialists in the provincial hospital. The opposition among specialists was mainly due to their being asked to provide care in PCU. Lack of human resources, particularly primary care physicians, was the main constraint on implementing PCU to meet the standard set by the MOPH. Nevertheless, being a populist policy and extensive advertising appeared to make providers actively improve their services and be more responsive to patients and social expectation.

---

*Impacts on providers and their responses*

Increase in demand for ambulatory care was apparent, particularly in the first year of implementation, and resulted in increase in workload. A remarkable shift of admissions from the provincial hospital to district hospitals was also observed in the first year.

Health centres gained the most from the payment method adopted and the strengthening primary care policy. The provincial hospital was the loser from the payment method adopted due to the relatively high proportion of inpatient costs and the low level of payment for inpatient care. Total hospital costs increased due to the increase in demand for care and per diems and overtime payment rates. Therefore, all hospitals applied some cost savings measures such as pharmaceutical management and adjustment of overtime staff. Rotating specialists to provide care in PCU limited their work in the hospital and might decrease quality of care provided by the hospital, though this could not be assessed.

*Impacts on the elderly*

Providing universal health coverage benefited most those previously uninsured, particularly the non-elderly. Crowding out effect from providing universal coverage on the use of care made by the elderly could not be identified as the study focused primarily on the elderly. However, there was an increase in ambulatory visits made by the elderly, with a remarkable increase in use of health centres in the second year of implementation. Greater budgets in health centres and establishment of PCU appeared to improve quality and availability of services at the peripheral level. Having more qualified staff in PCU improved capability of service provision at primary level; in addition, a greater budget enabled them to stock more drugs and equipment and expand service hours. This increased physical access and reduced transportation costs for rural elderly. The study was unable to establish whether quality of services provided to the elderly were appropriate to their needs, and whether the payment methods adopted for curative care had any negative implications for the elderly in terms of access and financial protection. Low coverage of preventive and promotive care was observed.

### **9.3.2 Access to and use of services and UC benefits by the elderly**

Two-thirds of the elderly in Yasothon had at least one chronic condition; moreover, nearly half of them had some difficulties in performing their daily activities because of the chronic conditions. The majority of elderly persons had some form of illness or used services due to chronic conditions in the previous month. The probability of use of ambulatory care and the number of ambulatory visits made were determined mainly by presence of chronic conditions. Use of ambulatory care covered by the UC scheme was also mainly explained by presence of chronic conditions. Moreover, the poor more frequently used the UC card in getting ambulatory care than the richer groups when controlling for illness and other variables.

For hospitalization, presence of chronic conditions, especially chronic disabling conditions, was the significant predictor of the probability that an individual was admitted, whether admission was covered by the UC scheme or not. The poor had a significantly higher probability of being admitted compared with the richer groups. However, the frequency of admissions among hospitalized elderly was mainly explained by predisposing and enabling factors. Those residing in urban areas, reporting convenient access, and having primary education or above were more frequently admitted than those residing in rural areas, reporting inconvenient access, or having none or less than primary education. Residing in urban areas and reporting convenient access were the only two significant variables explaining the number of admissions covered by the UC scheme among hospitalized elderly.

### **9.3.3 Financial protection for the elderly**

The majority of those seeking care had no expense caused by medical care, but non-medical expenditure remained. However, a few respondents still had a high burden of expenditure caused by medical care. A consistent gradient of the burden of out-of-pocket payment across income groups was observed; the poor spent out-of-pocket in relation to their ability to pay more than the richer groups. Medical and non-medical expenditures played an equal role in determining the burden of out-of-pocket payment. However, medical expenditure played a grater role for ambulatory care while non-medical expenditure played a greater role for hospitalization. Total expenditures on ambulatory care



accounted for the majority of the burden of expenditure. The relatively high burden of out-of-pocket expenditure among the poor was due to the relatively high service utilization rates and high cost of obtaining hospital care in contrast to their extremely low income.

Six and twelve percent of urban and rural respondents, respectively, spent out-of-pocket on health care greater than or equal to 40% of their per capita annual cash income in the previous year. Expenditure caused by medical expenses for ambulatory care played a greater role among urban respondents, while expenditure on hospitalization and that caused by non-medical items played a greater role among rural respondents. The magnitude of catastrophic expenditure was reduced to only 0.6 and 2% amongst urban and rural respondents, respectively, when self-reported financial difficulties were taken into account together with the level of payment made in relation to income.

High burden of expenditures caused by medical care was mainly due to non-compliance with the requirements for accessing free care. Perceived better quality of care, convenient access, greater responsiveness, and affordability of care provided in private facilities explained why some respondents did not use the UC card in obtaining care. Admissions caused by traffic accident injuries and informal payments for artificial lens in IOL operation were identified by a few respondents with high burden of expenditures caused by medical care, despite their compliance with the requirements for accessing free care. Expenditure caused by non-medical items played a substantial role among those with hospitalization who resided in rural areas; however, the details of expenditures were not available.

Family support was common in paying for health care for the elderly and best explained why the majority of those with high burden of expenditure did not report financial difficulties. In spite of the UC policy, fee exemption in public hospitals still had a role to play for those using services not covered by the UC scheme and unable to pay the fees. Serious implications on individuals or households due to high burden and the coping strategies adopted by them were not found.

## **9.4 Discussion on key findings from the study**

This section discusses the findings presented in the previous section. Section 1 focuses on issues relating to system design, policy implementation in study province and provider responses, and potential impacts on the elderly. Section 2 discusses illness among older people and the role of insurance in enabling access to ambulatory and inpatient care for the elderly. Financial protection of the UC scheme for the elderly is discussed in section 3, including the role of insurance in protecting expenditure caused by medical care and non-medical items, equity in out-of-pocket payment, catastrophic expenditure, and coping strategies.

### **9.4.1 UC policy implementation and provider responses**

Even though the study focused on policy implementation at the provincial level, some policy implementation issues were related to problems of system design which were out of the control of the province. Issues relating to system design will be discussed first followed by issues specific to the study province.

#### **Issues relating to system design**

##### *Benefit package*

The current benefit package of the UC scheme covers comprehensive personal health care. Comparing the depth of coverage of the UC scheme with those in other countries, the UC scheme provides a much deeper protection. Medicare part A in the U.S. covers only hospital care, while part B covers physician services but not prescription drugs (Centers for Medicare & Medicaid Services, 2003). Dental care is excluded from the benefit package of many countries, such as the U.S. and Spain (Fernandez-Mayoralas et al., 2000), while it is included in the UC scheme.

Even though the scheme aims to provide a comprehensive package, benefits specific to the needs of the elderly (also for other age groups) were explicitly specified for only preventive

and promotive services<sup>75</sup>. As an exclusions list only is provided for curative care, it is unclear whether new medical technology is included. Implicitly stating the benefit package might result in ineffective protection for the elderly since the elderly may not recognize what benefits they are entitled to, eg. artificial lens for IOL operation. Moreover, it may be the case that only priority services available in the hospital are provided to the elderly (i.e. they are not referred elsewhere). Excluding benefit already covered by another scheme, e.g. traffic accident injuries, is also problematic when the other scheme does not effectively protect its beneficiaries

The Traffic Accident Insurance scheme (TAI) is a compulsory insurance for all car owners and managed by various private insurance companies. As profits are the primary objective of private firms, various measures have been set in order to prevent financial deficit resulting in underutilization of the scheme (Limwattananon, 2001). This means the costs incurred from medical care due to traffic accidents were shifted from the TAI to the patients, public hospitals, or other insurance schemes. Currently, the problem of catastrophic expenditure due to traffic accident is likely to occur only among UC beneficiaries. The SSS does not allow any contracted hospitals to directly charge its beneficiaries while the CSMBS reimburses all public hospitals whatever they claim. The presence of catastrophic expenditure due to traffic accident injuries indicates that the TAI scheme does not effectively protect injured people from damages as stated by law. It also makes the UC scheme unable to protect its beneficiaries effectively.

#### *The UC budgets and allocation*

The 2001-2 per capita budget of the UC scheme was criticized as an underestimation, especially for inpatient care (Pannarunothai et al., 2001). The underestimation was due to employing the 1996 service utilization per capita without adjustment for changes in demographic composition and increase in service utilization. An increase in the proportion of people aged 60 and above was apparent, as shown in Table 3.1. Overall admission rates increased by 7% between 1996 and 2001 (NSO, 1996; NSO, 2001). Take up of UC benefit

---

<sup>75</sup> These include physical check-up, screening for hypertension, diabetes, visual impairment, cardiovascular disease, and osteoporosis. Home health care is also included in the benefit package for those with chronic disabling conditions who need care.

for hospitalization was also generally high (Pannarunothai et al., 2002; HSRI, 2003). The per capita budget for ambulatory care was less problematic due to the relatively low take-up of UC benefit when getting care. The per capita budgets were proposed by the technocrats in the MOPH and accepted by the Prime Minister without any adjustment; therefore, the under estimation of the budgets was mainly due to problems of calculation. In order to get the per capita budgets, the MOPH and the Bureau of Budget had to remobilize all the previous MOPH budgets relating to personal care into the per capita budgets.

Equity objectives play an important role in resource allocation (Sheldon and Smith, 2000; Rice and Smith, 2001). Population numbers, age, and sex are important determinants of need or demand for care; however, many other potential risk factors exist such as poverty, endemic diseases, etc. Many countries have adopted these factors in risk adjustment for budget allocation, e.g. Germany, U.K., Israel, etc. (Rice and Smith, 2001; Breyer et al., 2003). However, a flat rate capitation was chosen in the first year due to unavailability of information for risk adjustment and simplicity for rapid implementation. This will inevitably result in an unequal risk distribution between provinces; provinces with a greater proportion of high-risk groups such as older people, the poor, HIV+ beneficiaries, etc. will have a greater financial risk than those with a greater proportion of low-risk groups.

Including salaries in the per capita budgets had enormous effects on provinces and hospitals as health infrastructure has not been equally distributed. The abrupt change in the allocation criteria from a historical basis, based on supply factors, to a per capita basis resulted in mismatch of resources. Provinces with a relatively low number of staff in relation to population, such as Yasothon and those in the Northeast, gained more budget, while most provinces with a greater number of staff in relation to population i.e. those in the Central, had reduced budgets and needed additional money from the contingency fund. To get additional money, hospitals were required to develop an efficiency improvement plan. The allocation process was strongly opposed by those confronted by financial difficulties; this led the MOPH to change the allocation method in the second year by excluding salaries from the budget before allocating the remaining budgets to provinces on a per capita basis.

The expectation that provinces and hospitals gaining more money may be able to recruit more staff, especially physicians, and retain them in district hospitals is difficult to fulfil for

various reasons. Firstly, the MOPH is the major employer and distributor; therefore, without an explicit MOPH policy on redeployment of health staff, especially physicians, it is less likely that provinces or hospitals in less developed areas will be able to get more physicians. Secondly, the current incentives to staff paid by public hospitals are much less than those of private hospitals. Finally, redeployment of current staff is not only the matter of individuals but also their families. It may be possible to attract more newly graduated doctors, nurses, or others, but this requires an explicit policy from the MOPH.

#### *Development of primary care for the elderly*

Primary health care (PHC) has been a core strategy to achieve health for all since 1978 (WHO, 1978) and was restated in the 'Health-for-All for the twenty-first Century' policy (WHO, 1998). PHC continues to be a fundamental component of health policy, and of health systems; however, some diversity and innovations in PHC are required in a changing world (WHO, 2003a). The core principles of PHC include: universal access, equity, community participation, and intersectoral approaches (WHO, 2003b). Integration of geriatric care in primary care level appears to fit and meet the needs of the elderly since they need not only medical care but also social care. Continuity of comprehensive and integrated services is also crucial for the elderly.

Even though the UC policy aims to strengthen primary by requiring all CUPs to establish PCUs; however, no explicit policy for development of primary care for the elderly was stated. Priorities of service provision remain given to children and the younger age groups, such as child development, maternal care, AIDS, communicable disease control etc. Recognising the need for non-communicable disease control because of the rapidly ageing population and epidemiology transition, most hospitals and PCUs have set up special clinics for hypertension and diabetes, but not geriatric clinics. So this is more a disease oriented than comprehensive approach for the needs of the elderly. The needs for preventive and promotive services for the elderly have been emphasized by the UC policy and integrated in the benefit package, but not for curative care. Therefore, in order to meet health needs of the elderly, an explicit policy and plan on the development of primary geriatric care, i.e. human resources development, is needed.

### **Issues relating to policy implementation in the province**

Changing roles from direct control over the budget to purchasing care from PHOs required substantial management capabilities. Lack of management capabilities to perform new roles in reform processes have been found in developing countries (Mills et al., 2001; Lloyd-Sherlock, 2003). Various problems and constraints in implementing the UC policy were partly due to hurried implementation and lack of readiness of the system to perform the new roles, such as unclear function of the PHO, shortages of certain specialised skills, weak financial, information and personnel management systems, and lack of a regulatory system.

### **Insurance benefit management**

More complete coverage of beneficiaries' registration was found in this provinces than the others (Pannarunothai et al., 2002; HSRI, 2003). The better registration information system from the SIP project probably eased policy implementation, and resulted in fewer complaints on this issue in this province compared with others (HSRI, 2003; Srithamrongsawat and Lapying, 2003).

The fact that none of the elderly recognized that artificial lens are included in the benefit package best illustrated the weakness of information, education, and communication function of the PHO. Active provision of information to beneficiaries was not done, perhaps because of a conflict of interest arising from lack of separation of providing and purchasing roles of the PHO. Moreover, a strong message from the minister of "*Do not have problems*" made them afraid that some negative consequences might be incurred if they received complaints, so they did not promote the use of the call centre.

### **Purchasing care and payment methods**

To get the best value for the money spent is the main objective of purchasing health care. In order to meet this objective, some managed care elements are needed: appropriate provider payment, primary care gatekeeper, the maintenance of provider profiles, contracting with selected providers, utilization review and quality assurance, and development of standard treatment protocols (Kane, 1995). All countries where universal coverage is achieved have applied at least some forms of active purchasing (Kutzin, 1998). The UC scheme also adopted some forms of it such as performance-based provider payment methods, primary

care gatekeeper, selective contracting with private providers, and promoting hospital accreditation (MOPH, 2001).

The new payment method adopted in the UC policy requires substantial management capabilities to monitor and regulate providers, since different payment methods provide different incentives and have implications for access, quality of care, and costs (Barnum et al., 1995; Kutzin, 2001). However, the unclear function of the PHO caused confusion and meant they were unable to perform their functions properly. Moreover, reorientation and capacity strengthening for the new role and functions have not been provided by the MOPH. Lack of private provider involvement in the province, together with integration of purchaser and provider role within the MOPH, made it less problematic for the province to handle providers since the PHO could direct the hospitals. However, the situation is likely to change when private providers join the scheme and there is a separation between purchaser and providers.

Risk selection or cream skimming is a concern relating to a capitation payment (van Barneveld et al., 2001; Barros, 2003) and some risk adjustment mechanisms are required. However, this was less likely to happen in the geographically based registration. This problem may arise in the future when choice of public and private primary care is provided for beneficiaries due to asymmetry of information. Nevertheless, it is likely to be limited to only the capital district where market competition exists. Closer attention should be paid to whether the payment methods adopted by the province had negative consequences on intensity and quality of care received by the elderly and whether they resulted in crowding out of the elderly from the use of services. Under provision of expensive ambulatory care, i.e. elderly care and care for chronic conditions, might exist due to the poor incentive provided by the flat rate capitation payment. For inpatient care, even though the DRG system has taken severity of cases into account in groupings, some DRG groups are criticized as not consistent. This might result in under provision of care to those who need expensive care but only a low weight of DRG is obtained. However, the generally low payment rate per DRG received by the provincial hospital applied to all inpatients, not only the elderly. All these issues need a close monitoring system; unfortunately, utilization review and monitoring provider profile on this matter had not been developed in the study province. Therefore, lack of information on quality and intensity of care received by

beneficiaries, and the focus of the study on older people, meant the study was unable to comment on the issue of how payment method might have affected the elderly.

In contrast to curative care, more effort and interventions are needed for preventive and promotive services in order to raise individual demand to meet social demand. The capitation payment employed by the UC scheme to pay for these services might not provide enough incentives for providers to provide more of these services. Evidence from the survey and focus group discussions revealed that the coverage of clinical preventive services among the elderly was still low. This was partly because targets were not stated explicitly by the MOPH; moreover, the increase in workload for curative care is likely to have resulted in less time available to actively provide these services. Therefore, some adjustments or other payment methods that give greater incentives to provide these particular services may be required, such as fee for services or capitation plus bonus payment, like the UK payment of GPs, when the target is achieved. In addition, the target for each service should be explicitly set and closely monitored.

The flat rate capitation and flat rate payment per weight of DRG under global budget favoured health centres and district hospitals more than the provincial hospital due to the relatively greater unit cost of services provided by the provincial hospital (Pannarunothai and Kongsawat, 2001; Tisayaticom and Tonimitr, 2001). According to the DRG weighted global budget payment, hospitals will get additional payments from their admissions; therefore, they will have incentive to admit more patients when the marginal cost of the last unit of service provided is lower than the payment per weight of DRG received. This helps explain the increase in the number of admissions in district hospitals. Increase in the number of admissions further lower the payment rate under a global budget system, thus this puts more financial constraints on the provincial hospital. A shift of admissions from the provincial hospital to district hospitals might increase efficient use of services; however, lack of clinical outcome data in the study, and whether the elderly received appropriate and good quality care, was unknown.

Gaining more funds enabled health centres to improve service provision such as greater availability of drugs and equipment and extending service hours. The improvement is likely to benefit those who are residing in rural areas, especially those with chronic conditions



and/or physical disabilities such as the elderly, since it increases physical access and reduces the cost of obtaining care for them. Implications of the payment methods and adjustments adopted by the hospitals for the elderly in terms of quality of curative care were unknown since no monitoring system was in place and the study did not explore this matter. There is some concern about whether the financial difficulties, together with letting internists provide care in the hospital instead of specialists, reduced the quality of care provided by the provincial hospital.

### **Establishing and implementing PCUs**

The elderly perceived there to be improvement in availability and quality of services at primary care level. Human resources form the main problem in implementing PCU concept: the shortage of primary care physicians and lack of appropriately skilled staff to provide care in a PCU. Considering the current shortage of physicians in the province, employing professional nurses, instead of physician, to provide care in the PCU is more realistic and could improve quality of care in health centres substantially. The practice of rotating hospital staff to work in the PCU tends to transfer the hospital delivery system to the PCU and break down the comprehensive and integrated services which are the core principles of primary health care provided previously by health centres. Thus having permanent professional nurses working in PCUs may be more appropriate. The current practice in most PCUs appeared to meet neither the concept of family medicine encouraged by the policy nor the needs for care of the elderly. Physicians and professional nurses who provided care in PCUs were trained to work in hospital setting rather in PCUs and communities and tended to be disease oriented rather than adopting a holistic approach. Therefore, reorientation of concepts and a substantial training programme on geriatric care is needed in order to improve their skills in service provision for the elderly in addition to an explicit policy and a strategic plan of the MOPH on primary care and geriatric care.

#### **9.4.2 Use of care among the elderly**

According to the concept of mutability of the three classes of variables in the Andersen Behaviour model, enabling variables are the most mutable, which is crucial in developing policy to promote equitable access (Andersen and Newman, 1973). Providing universal coverage will reduce financial barriers in access, while improving quality and availability

of services at primary level will enable physical access to care. Therefore, theoretically, providing universal health coverage together with strengthening primary care of the UC scheme will bring about equitable access to care for the elderly. However, service utilization is an interaction between demand and supply of health care which is influenced by various factors (Barer et al., 1987). The initial decision on whether to visit a doctor is generally made by the individual, while the decision on the type and intensity of care is usually made by the doctor on behalf of the patient. Providers of health care also have their own interests to pursue, such as to get more revenues; therefore, they have a substantial role in determining demand for health care.

### **Illness and use of services among the elderly: the role of chronic conditions**

Chronic conditions play a substantial role in determining illness and use of services among the elderly since aging is a progressive, generalized impairment of various organs' function (Kirkwood, 1997). Illness and service utilization rates among disability-free elderly were much lower than those with disabilities. The fact that there were no differences in the illness and service utilization rates between the young old and the oldest old indicates that the relatively high illness and service utilization rates among them are mainly due to chronic conditions not age *per se*. It also suggests that it may be possible to be healthy in old age and a substantial portion of health care costs could be reduced if effective prevention programs for chronic conditions are carried out. The lack of difference in the prevalence of chronic conditions by socioeconomic and demographic factors might be explained by the generally high prevalence of chronic conditions among the elderly in this province. The aggregate analysis of conditions might be another explanation; differences were likely to exist if a specific condition was analysed, i.e. presence of cardiovascular diseases (Table A6.7 in Appendix 6).

Various factors could explain the relatively high figure in this study compared with that of the national figure (Table 3.6): differences in recall period, questionnaire and study design, and the relatively high illness rate in the province itself. Yasothon is one of the poorest provinces in the country and a correlation between ill health and poverty is generally known. A difference in the illness rates across income groups suggests that inequity in health existed among the elderly.

### **The role of the UC scheme: access to ambulatory care**

Despite the differences in the illness rates across income groups, use of ambulatory care by the elderly, as in most developed countries i.e. the U.K. (Victor and Vetter, 1986), Spain (Fernandez-Mayoralas et al., 2000), Israel (Walter-Ginzburg et al., 2001), and Switzerland (Schellhorn et al., 2000), was equitable, regardless of the difference in type of services used. Health centres played a crucial role in this achievement, as major and increasing providers of health care in rural areas (Figure 5.4). To what extent the current improvement was attributable to the UC scheme is unclear due to lack of information on access prior to the UC scheme in the province. A previous study revealed that living in a rural area was a determinant of high health service use in Thai elderly (Jitapunkul et al., 1999). Therefore, considering the relatively high coverage of health insurance among rural elderly prior to the UC policy and previous evidence, if the current equitable access was the effect of the UC scheme, it was likely due to the effect of improving physical access rather than the effect of insurance *per se*. It should be noted that the functions of insurance can be effectively performed only when there is reasonable physical access. A study in Argentina commented that a large number of elderly beneficiaries of the Integrated Healthcare Programme (PAMI) in the north and north-west were not able to use services since its contractors were available only in the provincial capitals (Lloyd-Sherlock, 1997).

Even though there was equitable access to overall ambulatory care, urban elderly and the richer groups used more hospital-based services which are costly compared with non-hospital-based services (Srithamrongsawat et al., 2000; Tisayaticom and Tonimitr, 2001). Moreover, the quality of care provided by different types of facilities might be different, particularly care specific to the needs of older people, geriatric care. A number of quality problems have been identified in some health centres in Thailand where health workers received no training in geriatric care (Lloyd-Sherlock, 2002a). However, lack of information on quality of care provided by different health facilities in this study made it difficult to judge whether the quality of care received by the elderly varied between facilities.

The poor made better use of services covered by the UC scheme than the rich. Greater ability to pay and the relatively low cost of ambulatory care best explained the relatively

low take-up of UC benefit for ambulatory care among the richer groups. Whether the UC scheme provided greater benefit to the poor than the richer groups was not clear since the richer groups might be able to seek better quality and more effective care, i.e. hospital-based or specialist care, more than the poor. The study was not able to distinguish services provided by the provincial hospital as primary care or specialist outpatient care since the hospital also acted as primary care provider for its beneficiaries.

#### **The role of the UC scheme: access to inpatient care**

The relatively high admission rate among the elderly in this study compared with other studies (NSO, 2001; Pannarunothai et al., 2002; HSRI, 2003) could be explained by the same reasons explaining the relatively high illness rate: differences in study design and questionnaire and the relatively high illness of the elderly in the province.

Like the US (Wolinsky et al., 1983; Evashwick et al., 1984; Blazer et al., 1995) and Israeli (Walter-Ginzburg et al., 2001) experiences, the probability of an individual being admitted in the previous year was equitable. However, in contrast to the US experience (Blazer et al., 1995), the more frequent admission of urban elderly and those reporting convenient access indicates that the problem of physical access to hospital care remained in Thailand. The relatively high costs of access to hospital care of the rural elderly was one explanation for this, since the UC scheme covers only medical care costs while the substantial cost caused by non-medical items remains; this will be discussed later. This also raises questions about whether there were unnecessary admissions among the urban elderly and optimum admissions among rural respondents, or vice versa. Lack of clinical information made it difficult to judge which one was optimum.

#### **9.4.3 Financial protection for the elderly**

The UC scheme reduces a substantial amount of the cost of the services covered by the scheme for the elderly complying with the requirement for accessing free care. However, nearly one-fifth of care sought by the elderly was self-prescribing; therefore, some burden of expenditure caused by medical care remained. High burden of medical expenditure on ambulatory care is likely for those frequently using services uncovered by the UC scheme, such as private services.

For non-medical expenditure, the cost of obtaining care is borne by individuals and the level of expenditure is likely to be determined by distance and type of transportation used, type of care (OP-IP), type of ward (public-private), and number of hospital days. The common use of health centres for ambulatory care amongst the rural elderly and the poor best explained why the level of non-medical payments for ambulatory care in the previous month was comparable across geographical areas and income groups. This suggests that improving quality and availability of services in health centres not only increases physical and time access, but also reduces the cost of obtaining care for those residing in rural areas, especially in the evening when public transport is not available. The cost of obtaining inpatient care is generally higher for rural residents than urban residents, since the hospital is located away from their home and public transport is less available in rural areas. The relatively high cost of obtaining hospital care best explained the relatively less frequent admission among rural residents. This finding is similar to evidence found in developed countries that cost of obtaining hospital care remains a barrier to access in rural areas in spite of universal health coverage (Blazer et al., 1995).

#### *Equity in out-of-pocket expenditure*

Having health insurance helps to reduce out-of-pocket payment for the elderly, particularly the poor elderly (Gross et al., 1999; Selden and Banthin, 2003). The extremely high burden of out-of-pocket expenditure among a proportion of the elderly in this study could be explained by various factors. First, elderly people have relatively high illness and service utilization rates compared with other age groups, and the study province probably had high illness and service utilization rates relative to other provinces. Secondly, expenditure caused by non-medical items alone accounted for half of the total burden; all previous studies in Thailand included only expenditure caused by medical care (Pannarunothai and Mills, 1997; Pannarunothai and Patmasiriwat, 2001). Thirdly, the extremely low income of individuals, particularly among the poor played a role in the explanation. Part of this was attributable to under-reporting of income, and part to the relatively low income of the province.

The relatively high burden of expenditure from ambulatory care could be explained by the more frequent use and the relatively low take-up of UC benefit for ambulatory care. This

reveals the importance of expenditure on ambulatory care in causing catastrophic expenditure, particularly among the poor, and suggests that, in order to prevent catastrophic expenditure among the elderly, comprehensive coverage is preferable to hospitalisation insurance. Expenditure caused by non-medical items for hospitalization played a crucial role in determining the burden of out-of-pocket expenditure among the poor, accounting for one-third of their total burden. This reveals the importance of and the need to tackle non-medical expenditure.

A consistent gradient of burden of out-of-pocket payment across income groups indicates that inequity of out-of-pocket payment remained. The level of payment made by the poorest group and their income suggests that the relatively high burden among them was due to their low income rather than high cost of care. This is beyond the scope of the health sector and requires a broader policy context in order to tackle income inequalities.

#### *Catastrophic expenditure*

The UC scheme protected the elderly quite well from catastrophic expenditure caused by medical care as the majority of them who used health care had no expense caused by medical care either for ambulatory care or hospital care. The magnitude of catastrophic expenditure was extremely low and much lower than that of Medicare in the US (Selden and Banthin, 2003), especially when both objective and subjective criteria were employed together. However, the presence of a few respondents with catastrophic expenditures, in spite of using the UC card in getting care, suggests that problems relating to the system remained. Catastrophic expenditure caused by medical care was mainly due to non-compliance with the requirements for accessing free care, i.e. self-prescribing, using private facilities. Even though the decision not to get care provided by the UC scheme was the choice made by individuals or their family according to their preferences and ability to pay, perceived poor quality of public services played some role. The current quality improvement program in public facilities and choice of registered hospital, which will be provided in the near future, might be able to reduce this problem; nevertheless, better information for beneficiaries is also required.

Informal payments are common in developing countries and transition economies (Delcheva et al., 1997; Ensor and Savelyeva, 1998; Killingsworth et al., 1999; Balabanova

and McKee, 2002). Similarly, informal payments for services provided by specialists in public hospitals have been in place for a long time in Thailand, especially amongst some obstetricians and surgeons. Only informal payments for artificial lens in IOL operation were identified in this study, since the study focused only on older people and cataract is a common problem among them. Experiences from other countries shows that various factors influence informal payments, such as a tradition of giving gifts, poor physician salaries, scarcity of medicines and other supplies, perceived poor quality of care by patients, and a loose regulation framework (Thompson and Witter, 2000). Most of these factors, with the exception of lack of supplies, could explain the case of informal payments for artificial lens in Thailand. Artificial lens are already included in the benefit package of the UC scheme and the MOPH reimburses the costs for lens to the hospitals according to the standard price set by the MOPH. Ensor (2004) classified informal payments into three types according to the reason for and the nature of these charges: contributing towards the cost of care, misuse of power and market position, and additional services (Ensor, 2004). For this case, the ophthalmologists in the hospital exerted their power by not procuring lens as part of the hospital stock and asked the patients to purchase them from their clinic. On the basis of informal discussion with an ophthalmologist, it is estimated that one-third of ophthalmologists in public hospitals behave like this. Informal payments are likely to distort the allocation of resources and create financial barriers in access to needed care for the poor elderly. Presence of informal payments also indicates the weakness of regulation and information, education and communication roles of the MOPH and PHO.

*Coping strategies: the role of infra-familial support and hospital exemption*

Financial support from children played a substantial role in releasing the burden of out-of-pocket expenditure on health care for the elderly and explained why the majority of those having high burden of expenditure did not report financial difficulties. Intra-familial support plays a crucial role in supporting the elderly either in terms of daily living or care (Knodel and Chayovan, 1997a; Knodel et al., 1999). The majority of them received transferred money from either co-resident or non co-resident children to support their daily living. Financial support from children was also common in paying for medical bills and the costs of obtaining care, particularly when they were faced with high cost care. Previous evidence relating to health service use in Thai elders also showed that children played an

important role in taking care and paying for treatment of their parents (Jitapunkul et al., 1999). This can be explained by the strong sense of obligation towards parents and the elderly which is widespread in Thailand (Knodel and Chayovan, 1997a). However, it was not clear whether the payments made by their children would shift the problem from parents to children; it is possible that the children might end up in debt from paying for their parents' care.

Widespread intra-familial support and less developed institutionalization of social transfers in Thailand mean that older people are more dependent on their children. Moreover, those who do not have children have to rely on their savings and may be worse off. Although previous evidence showed that intra-familial support in Thailand has been maintained overtime (Knodel et al., 1992; Knodel and Chayovan, 1997b; Knodel et al., 1999), a rapidly aging population together with urbanization raises questions and concerns about this issue.

Despite the UC scheme, hospital fee exemption is still a last resort for those unable to pay hospital fees. Informal fee exemption by sliding scale in public hospitals, known as type B exemption, has existed since the introduction of user fee policy in public facilities in Thailand. Expansion of insurance coverage has reduced a substantial proportion of informal exemption in public facilities (HIO, 2002) but it remains. Results from this study have revealed that hospital exemption is still essential in order to prevent impoverishment from the use of needed care amongst the uninsured or those using services not covered or only partially covered by the UC scheme. However, it will be more difficult now for the elderly to get fee exemption from public hospitals since the budget previously provided to absorb the exemption was abolished by the Budget Bureau Office after the introduction of the UC scheme. This means that public hospitals have to bear all the costs if they provide fee exemption for patients.

## 9.5 Summary

This chapter has described and discussed the strengths and weaknesses of the study, and results relating to study objectives: policy implementation and provider responses, access to medical care, and financial protection of the UC scheme for the elderly.



Employing various study methods, both quantitative and qualitative approaches, was a strength of this study and made it possible to complement and cross-check results from one method with another method. Focusing on one province also made it possible to go into some depth in order to understand the context and process of policy implementation. However, this also limited generalisation of the findings. The main weaknesses included lack of information prior to the UC scheme in the study province, the problems relating to measurement of income and health expenditure, lack of information on quality and intensity of care received, and analysing service utilization data in aggregate terms.

The main constraints in UC policy implementation came from the problems relating to both system design and management in the province. The problems of traffic accident injuries and health resource allocation were related to system design, while lack of management capabilities to purchase care was the main problem of the province as well as lack of explicit policies of the MOPH on human resources development and redeployment, development of PCU and geriatric care. The capitation payment method and establishment of PCU caused an apparent improvement in service provision at primary care level; however, services specific to the needs of the elderly remained underdeveloped. Moreover, the low level of payment to the provincial hospital calls for close attention to its implications on access and quality of care for the elderly.

The scheme was successfully implemented in Yasothon in terms of insurance coverage for the elderly. Use of ambulatory care was equitable among the elderly, regardless of differences in type of services used. However, whether the needs for care of the elderly were really met was unclear due to lack of information on intensity and quality of specific aspects of care. In contrast to ambulatory care, inequity in use of inpatient care among those accessing hospital care remained and was explained mainly by predisposing and enabling factors.

The UC scheme provided protection against a substantial part of the cost caused by medical care; however, expenditure caused by non-medical items remained. Inequity in out-of-pocket payment existed in spite of the UC scheme. Expenditure caused by non-medical items played an equal role to that of medical care in determining the burden of out-of-pocket expenditure on health care. The relatively high illness and utilization rates in

contrast to the extremely low per capita income among the poor explained the high burden among them. The substantial income inequality in the study province, inevitably limited the degree to which the UC scheme could achieve equality.

The magnitude of the problem of catastrophic expenditure was extremely low. Negative implications in terms of costs and coping were not identified due to the prevalence of familial support; moreover, hospital fee exemption remained.

## **CHAPTER 10: CONCLUSIONS AND POLICY IMPLICATIONS**

This chapter demonstrates the extent to which this study's objectives have been met. The conclusions are presented into two parts. The first section presents overall conclusions reached from the findings relating to the study objectives. The second section presents conclusions relating to scheme design and management based on what the study reveals about universal health coverage more generally. The third section presents what the study contributes to the knowledge relating to universal health coverage for the elderly. Policy implications for the Thai health care system and elsewhere are highlighted in the fourth section, followed by areas of further research in the fifth section.

### **10.1 Conclusions on findings**

The UC scheme was successfully implemented in Yasothon in terms of beneficiary registration; however, the registration based on administrative area led to a few of them reporting inconvenient access to care at their registered hospital. Lack of management capability of the PHO to purchase services was the main constraint in terms of insurance management. The PHO has not been strengthened to monitor and regulate providers. Information, education, and communication functions were not actively performed to inform beneficiaries about the benefits. Lack of appropriate skilled staff to provide care in PCU was the main constraint in establishing PCUs; there were insufficient physicians in district hospitals, while nearly all physicians in the provincial hospital were specialists.

Providing universal health coverage increased the workload of providers, especially for curative care. The per capita budget allocation for all personal care brought substantially more budget to the province, but the per capita budget for inpatient care was underestimated. Health centres gained the most from the allocation and payment method adopted, in addition to the strengthening primary care policy. Health centres' budget gain contributed to improvement in service provision at primary level. In contrast to health centres, the provincial hospital gained the least; the level of payments for inpatient care was less than the cost of services provided in the provincial hospital. All hospitals adopted some cost saving measures, though the effects on the elderly are not clear.

Getting qualified staff such as professional nurses or physicians in health centres being upgraded to PCUs further improved service provision at primary level. However, only limited numbers of health centres were upgraded to PCUs. Moreover, primary care services specific to the needs of the elderly, geriatric care, was little developed and no attention was paid to quality of care for the elderly as a distinct group. Some negative implications were identified from being a PCU. The increased workload of curative care reduced the time available for active prevention and promotion activities. Moreover, adopting the hospital service delivery system in PCUs might encourage a break-down of the comprehensive and integrated service delivery system previously provided in health centres.

Regardless of the difference in type of facilities used, access to ambulatory care among UC cardholding beneficiaries was equitable and mainly explained by need factors, the presence of chronic conditions. Moreover, the UC scheme favoured the poor more than the richer groups since the poor were more likely to use ambulatory care covered by the UC scheme. Health centres played a substantial role in the success since most of the ambulatory visits made by rural elderly were sought from health centres. The implications of existence of differences in type of facilities used by income and area of residence could not be examined. In contrast to ambulatory care, admission among those accessing hospital care was inequitable; more frequent admissions were observed amongst those residing in urban areas or reporting convenient access. Having greater physical access and the relatively lower cost of obtaining hospital care explained the more frequent use of the latter groups. A similar pattern was observed for admissions covered by the UC scheme.

The UC scheme substantially reduced the cost caused by medical care for those using services covered by the UC scheme. However, expenditure caused by non-medical items remained and played a role equal to that that caused by medical care in determining the burden of out-of-pocket payment. In spite of the UC scheme, inequity in out-of-pocket payment remained. The relatively high illness and service utilization rates in contrast to the extremely low per capita income of the poor explained the extremely high burden of expenditure on health care among them.

Six and twelve percent of urban and rural respondents, respectively, spent out-of-pocket on health care greater than or equal to 40% of their per capita annual cash income in the

previous year. Non-compliance with the requirements of the UC scheme for accessing free care explained the majority of those with high burden of expenditure caused by medical care. High burden of expenditure caused by non-medical items featured mainly among those with hospitalization and residing in rural areas. Taking self-reported financial difficulty caused by health expenditure into account, the magnitude of catastrophic expenditure was reduced to a very small proportion, 0.6 and 2% amongst urban and rural respondents, respectively. The greater proportion of rural elderly and the poor with catastrophic expenditure suggests that the UC scheme probably provided greater protection for those residing in urban areas and the rich. Nevertheless, the vast difference in income distribution, with the extremely low income of the poor, together with the relatively high cost of obtaining hospital care for the poor and rural respondents, played a substantial role in this problem.

Serious implications of catastrophic expenditure on the elderly in terms of cost and coping were not found due to widespread familial support and the existence of fee exemption in public hospitals. Financial support from children played a crucial role in relieving the burden of out-of-pocket expenditure on health care for the elderly and explained why the majority of those with high burden did not report financial difficulties. Despite the UC scheme, hospital fee exemption is still a last resort for those using services not covered by the UC scheme and unable to pay the fees.

## **10.2 Conclusions relating to scheme design and management**

Important issues affecting scheme performance and relating to scheme design and management are reviewed below.

### **Issues relating to problems in the health care system**

Even though the study focussed on UC scheme implementation at the provincial level, there were some wider issues not directly related to the UC scheme but affecting its performance, such as health resource distribution and informal payments.

#### ***Health resource distribution***

Even though there has been an improvement in health infrastructure in Thailand during previous decades, various types of health resources are not equally distributed. The abrupt

change in the budget allocation from supply-based allocation to demand-based allocation resulted in a mismatch of resources, which was one of the main constraints in UC policy implementation. Yasothon, like most provinces in the northeast, gained in budget but still had insufficient staff, especially physicians, dentists, pharmacists, or nurses. On the other hand, many provinces in the central region were short of budget while they had relatively high numbers of staff in relation to population. More difficulties in policy implementation were expected in provinces where there were budget shortages which might have negative implications on the elderly in terms of access and financial protection.

### *Informal payments*

Informal payments are common among some specialists in Thailand. Informal payments have a similar effect to user fees; they create financial barriers in access for those who are in greatest need but unable to pay, and might drive some patients into impoverishment from the use of these specialist services. The presence of catastrophic expenditure from informal payments made for artificial lens indicates that informal payments are an obstacle to the UC scheme's achievement of equity in access to and finance of health care.

### *Primary care development for the elderly*

Geriatric care at primary care level remains underdeveloped. Even though the UC policy aims to strengthen primary care; however, priority of service provision has not been given to care specific for the elderly. The current practice in PCUs does not appear to meet the needs for care of the elderly.

## **Issues relating to scheme design and implementation**

### *Benefit package*

Even though the UC scheme provides a comprehensive package, only personal services for health promotion and prevention are clearly specified in the benefit package. The implicit nature of curative benefits caused ineffective protection for the elderly in some circumstances, such as the case of payment for artificial lens in IOL operation, since the elderly did not know what they should get and hospitals might provide only services available in their own facility. The case of catastrophic expenditure from traffic accident injuries also reflects the problem of fragmentation of benefits covered by insurance

schemes; even though it is not specific to the elderly, it affected a few of them as shown in the study.

### *Per capita budget*

Evidence from this study revealed that the budget for inpatient care was under estimated. As the majority of hospitals are under the MOPH and many of them have reserve revenues from the past, it is possible for the MOPH to direct all hospitals to pursue the policy in the transition phase. However, it is less likely to be sustainable in the long run when there is a separation between provider and purchaser.

Equity objectives underlie the principle of resource allocation. However, the objective might not be fully achieved due to unadjustment for age and other need factors in the allocation to provinces. Provinces with greatest needs such as those with greater number of older people might not get enough budget to meet the needs of their older citizens.

### *Payment methods and their effects*

The flat rate capitation employed by the province led one district hospital into a financial deficit due to the low number of population in the district. Risk selection is less likely to happen in the geographically based registration. It may be the case only when choice of providers is provided and competition exists. Under provision of services to those needing expensive care, i.e. elderly care, is a potential risk of the flat rate capitation payment. However, whether this problem existed was unclear due to lack of information on intensity and quality of ambulatory care received by the elderly. In order to apply a risk adjusted capitation to protect the elderly and other high risk groups from discrimination, substantial information in relation to need for health care is required, in addition to management capabilities at the provincial level.

The flat rate payment per weight of DRG under global budget provided greater incentives for district hospitals to admit more patients due to their relatively low unit cost of the same DRG compared with that of the provincial hospital. Again, lack of information on quality and intensity of care made the study unable to comment whether risk selection and under provision of services to the elderly existed in the provincial hospital. There is a potential risk that patients with a low weight of DRG but requiring expensive care (e.g. patients with

inconsistent DRG groups) might face this problem, but it is likely to vary from DRG to DRG, and is not specific to the elderly. Nevertheless, the generally low payment per weight of DRG received by the provincial hospital furthered this risk and needs a close monitoring system.

The capitation payment for preventive and promotive service seemed to provide few incentives to provide these services for the elderly. The low coverage of these services suggests that modification of payment method is needed in order to provide greater incentive for providers to provide these particular services as well as a monitoring system.

### *The role of primary care level*

As major providers for ambulatory care, particularly for rural elderly, health centres played a crucial role in achieving equitable access to ambulatory care for the elderly. Moreover, the difference in the number of admissions across geographical areas emphasized the importance of physical access. This implies that without a well-established infrastructure for primary care, it is less likely that equitable access will be achieved, particularly for the elderly. The cost of obtaining hospital care is relatively high for those residing in rural areas; moreover, older people also have limited physical mobility.

It was unclear whether health needs of the elderly were being met with good quality of care due to the aggregated analyses and lack of information on quality and intensity of care. However, given that no specific benefits package is provided for the elderly, there is limited capability of health workers at primary level, and geriatric care is under developed in the current system, unmet need and problems of quality of care of specific conditions for the elderly probably exist.

### *The importance of management capabilities*

Management capabilities are crucial for insurance management and purchasing care. Shifting from an integrated health care system where the MOPH is both financing and providing care to a separation between purchaser and provider requires substantial management capabilities of the purchaser. The problem of informal payments revealed the weakness of the management capacity of the PHO in providing information and protecting beneficiaries. Moreover, quality of care and provider behaviour has not been monitored.



Without sound management capability within the PHO, effective protection of the UC scheme for the elderly may not be achieved.

### **10.3 Contribution to knowledge**

In spite of some shortcomings, this study contributes to the literature on the role of health insurance for the elderly in a number of ways. Studies relating to access to health care and financial protection for the elderly are mainly those conducted in developed countries where universal coverage has been obtained. Only a few studies relating to this issue in developing countries could be identified in the international literature (Lloyd-Sherlock, 1997; Jitapunkul et al., 1999; Kumnuansilpa et al., 2000; Lloyd-Sherlock, 2002a). This study was the first study to focus on the role of insurance and access to care and financial protection for Thai elderly after the introduction of universal health coverage. Thailand is the front-runner among lower middle-income countries that are implementing universal health coverage. So this study adds to the few studies that exist, thereby increasing the understanding of the role of health insurance in enabling access to care and financial protection for the elderly in a less developed country context.

The study has contributed to knowledge around the role of insurance for the elderly. It revealed that equitable access to general health care for the elderly exists under universal health coverage when there is reasonable access to services. The study revealed the importance of primary care and physical access for the elderly. Equitable access to ambulatory care among the elderly in this study was attributable to the well-established infrastructure for primary care, while disparity in access to hospital care across geographical areas remained. Universal health insurance is meaningful only when there is reasonable physical access to services (Kutzin, 1998). This implies that insurance involves more than just financial protection. To be truly protected against the risk of ill health, there must be physical as well as financial access to care. Moreover, development of primary geriatric care is likely to be needed in order to meet achieve quality of care for specific needs of the elderly.

Providing universal health coverage for the elderly can reduce a substantial cost caused by medical care for the elderly, particularly when they comply with the requirements for accessing free care. However, the costs of obtaining care remain and play a substantial role,

particularly for rural elderly and might be catastrophic, especially when they have to stay in hospital. This emphasizes the need for a supporting system, i.e. effective ambulance system and effective public transportation system, in order to ease access and reduce financial burden on the rural elderly from accessing hospital care.

The study revealed the importance of system design and management of insurance schemes in their performance. The few cases of catastrophic expenditure from traffic accident injuries and informal payments were problems that related to system design and lack of management capabilities of the PHO to protect the elderly completely.

In Thailand and many East Asian countries, familial support plays a crucial role in supporting the elderly, particularly when they are in need. Consistent with other studies in Thailand (Knodel and Chayovan, 1997; Jitapunkul et al., 1999; Knodel et al., 1999), financial support from children remains and plays a crucial role in paying for health care for the elderly, in spite of universal health coverage. However, the rapidly aging population, together with urbanization reveals the need for institutionalization of social support and an appropriate policy to maintain family bonds and support.

Finally, in developing countries where there is considerable income inequity, providing universal coverage without the support of broader policies may not be able to achieve equity in the finance of health care. Income inequity, with the extremely low income of the poor in this study, played a substantial role in explaining the gradient of out-of-pocket expenditure between income groups and their relatively high burden of out-of-pocket expenditure. Therefore, a broader income distribution policy is needed in order to achieve equity objectives.

### **10.4 Implications of the study for policy makers**

In this section, recommendations will be proposed in the light of the conclusions specific to scheme design and management. Policy recommendation specific to the Thai context will be proposed first, followed by general recommendations for middle-income countries.

#### **10.4.1 Recommendations for Thai policy makers**

Health infrastructure and resources are not equally distributed in Thailand. The abrupt change of the allocation criteria from supply-based to demand-based allocation resulted in a

mismatch of resources. The gain in budget but lack of physicians and other health personnel made the province and providers unable to pursue the policy effectively, particularly the establishment of PCUs. Similarly, provinces experiencing a shortage of budget but excess staff might not be able to perform the tasks effectively. In order for smooth policy implementation, a transition phase and a comprehensive policy and plan for the distribution of all health resources are required, not only the budgets. Health worker redistribution within the current situation is difficult since it may not be politically feasible and it is not a matter of the individuals alone but also their families. Nevertheless, in order to pursue the policy, an explicit policy on redeployment of health resources is required from the MOPH, particularly for new staff and new investment.

The 2002 per capita budget was underestimated, particularly for inpatient care, and resulted in financial difficulties for big hospitals. In order to achieve policy objectives and maintain high quality of care, especially for high risk groups such as the elderly, an adequate budget for the program is essential. In addition, in order to allocate health budgets more equitably and to protect those with greatest need such as the elderly, age and other aspects of risk adjustment should be considered for budget allocation to provinces and capitation payment for curative care. In doing so, an information system relating to hospital cost and service utilization should be established and strengthened. Including inpatients with low weight DRG in the capitation payment for ambulatory care may prevent unnecessary admission. Regrouping of some DRG groups and readjustment of the per capita budget for inpatient care and level of payment to a reasonable level may be important to protect the elderly and those who need expensive inpatient care. To encourage more use of preventive and promotive services, a payment method that is more related to the volume of services provided by providers may be more appropriate than the current pure capitation, such as fee-for-service or adding a bonus to a capitation for those achieving the target.

A well-established primary care level and development of primary geriatric care plays a crucial role in achieving equitable access to good quality ambulatory care for the elderly. However, the quality of care specific to the needs of the elderly in most health centres might be questionable as only a few of them were upgraded to PCUs and little emphasis was placed on the needs of the elderly. In order to improve the quality of care of the primary care level, more qualified health personnel, such as professional nurses with good

skills in geriatric care, should be taken on in all health centres as permanent staff. In addition, planning for human resources development and training curriculum should emphasize the needs of primary geriatric care. A reorientation of the role of primary care and training courses in geriatric care is needed for health workers in health centres and district hospitals in order to improve quality of primary geriatric care at the peripheral level,.

The inequitable access to inpatient care emphasized the problem of physical access in rural areas. The relatively high cost of obtaining hospital care for rural elderly can be catastrophic. An approach that the health care system may be able to use to ease access to inpatient care and protect them from catastrophic expenditure caused by non-medical expenditure is to establish an effective ambulance service between hospital and health centre or PCU. An effective ambulance system to transfer severely ill patients from health centres to hospital for care can reduce a substantial cost for the elderly residing in rural areas.

Lack of clarity in its role and of management capacity meant the PHO was unable to perform an effective purchasing role. An effective purchaser, whether it is the PHO or a new office<sup>76</sup>, is required at the provincial level to ensure that the elderly are fully protected by the insurance scheme. Information, education, and communication functions should be strengthened to increase awareness of the benefits provided by the scheme. The monitoring and regulation role of the PHO should be developed, in addition to an information system, to monitor provider behaviour and the quality of care provided. Management skills are crucial to perform these new functions; therefore, training courses in financial, information, and personnel management and purchasing care on are urgently needed to improve managers' capabilities.

Informal payments for artificial lens in IOL operation were due to misuse of power by some ophthalmologists. In fact, artificial lens are already included in the benefit package and the Health Insurance Office in the MOPH reimburses all hospitals performing this

---

<sup>76</sup> The current conflict between the MOPH and the NHSO make this issue more complicated since the PHO is under the MOPH while the NHSO holds the budget.

operation for the lens at a standard price. In order to ensure that all older people who are in need are able to access to this service, the payments should be eliminated. Various approaches might be possible to counteract this problem. Self-regulating through the Royal College of Ophthalmologists of Thailand (RCOT) is one approach; currently the RCOP has put some effort into solving this problem by running an IOL operation campaign together with some foundations and asking ophthalmologists to discontinue informal charges. However, self-regulation alone might not be enough to prevent informal payments. Thus information and education on the benefits should be strengthened through mass media in order to inform the public; if the benefits are generally known by the public, the problem may be reduced. In parallel, the PHO should be strengthened to perform a regulatory role in order to ensure that UC cardholding beneficiaries get the benefits provided and all contracted providers follow their agreement. Finally, as informal payments are not confined to only ophthalmologists but are also charged by other specialists for elective surgeries, then to get rid of informal payments, a comprehensive action is required over and above changing the level of provider payments.

Fragmentation of benefit package results in imperfect protection. The case of traffic accident injuries best illustrates this problem even though it is not specific to the elderly. Shifting of the cost from private insurance companies to the injured persons, hospitals, or other insurance schemes is unacceptable. As the scheme is compulsory and the injured person is the one who gets the benefit, not the person who pays the premium, then competition among insurers to provide benefit for beneficiaries does not work in this case. Moreover, in the nature of private for-profit institutions, the objective of the private insurer does not correspond with public policy in this matter. The catastrophic expenditure caused by traffic accident injury indicates the failure of the TAI to protect injured persons as stated by law. This calls for a comprehensive reform of the TAI scheme and better coordination between schemes.

### **10.4.2 General recommendations for middle-income countries**

Universal health coverage is desirable in order to achieve the equity objectives of the health care system and has been emphasized by WHO (WHO, 1999; WHO, 2000). Providing universal health coverage will enhance the functions of health insurance, enabling access to

needed care and preventing impoverishment from the use of care. Regarding the relatively high health need and high cost of care of older people in contrast to their relatively low ability to pay, universal health coverage should be provided to all elderly persons. Nevertheless, scarcity of resource in developing countries may limit the depth of service coverage provided by universal coverage policy; it may not be able to pay for all of the services that the population would like to see covered. Lower priority services, which will vary from one country to another, may only be available on payment. However, the comprehensiveness and the extent of services covered will inevitably affect the cost and effectiveness of the insurance functions.

To achieve universal health coverage with effective health care risk protection at the least possible cost, reforming of the health care financing and health care delivery system is desirable in order to enhance the functions of insurance and sustainability of the system. Improving sectoral efficiency in the administration of the insurance function (revenue collection, pooling, and allocation and purchasing of health care) is also a means by which the insurance function can be broadened. Universal health coverage could be financed through various financing means, whether general revenue, social insurance, medical saving account, or a mixture of these. Equitable resource allocation is crucial in order to achieve policy objectives; however, a transitional phase should be put in place in order to move from supply to demand based resource allocation, and all available need variables should be taken into account in the allocation formula. In addition, essential elements of active purchasing should be put in place in order to ensure the effectiveness of the functions of insurance, such as provider payment, primary care gatekeeper, the maintenance of provider profiles, contracting with selected providers, utilization review and quality assurance, and development of standard treatment protocols.

The relative success of the UC scheme in achieving equitable access to general ambulatory care for Thai elderly was partly due to the well-established infrastructure of primary care level in rural areas. This emphasizes the importance of primary care and physical access, particularly for the elderly since they have limited physical mobility and greater dependence. Moreover, the cost of *obtaining* hospital care is relatively high for rural elderly, and in some circumstances, it may be higher than the cost of medical care. Without

reasonable physical access, it is less likely that universal health risk protection would be achieved.

However, quality of geriatric care in primary care settings in developing countries might be problematic, particularly when services are provided by paramedical personnel. Priorities of care may still be given to other services i.e. maternal and child care; however, considering the rapidly aging population in most developing countries, greater priority should be given to geriatric care. Training courses in geriatric care should be provided for health workers in order to improve quality of care to meet the needs of the elderly.

Management capacity is crucial for the success of policy implementation. Lack of capacity of the government in developing countries to perform the new roles in health sector reform has been identified, such as lack of consensus and/or understanding of the reform, hurried implementation, shortages of certain specialised skills, and weak financial, information, and personnel management systems (Mills et al., 2001). Therefore, all related management capacities should be developed in order to implement the policy effectively.

### **10.5 Areas for further research**

This study has explored and examined the role of the UC scheme in enabling access to care and financial protection for Thai elderly. The main emphases of the study are on overall service utilization and aggregate expenditures, so there are many research questions that this study could not provide answers to.

First, this study measured service utilization in the aggregate regardless of circumstances, i.e. type, quality or intensity of services used, and outcomes. Equitable access to ambulatory care regardless of circumstances might mean receiving equal amount of care, but with differences in quality of care and outcomes. Disparity in the number of admissions also raises questions of whether the more frequent admissions of urban respondents are desirable. Lack of clinical information on their admissions makes it difficult to judge whether they were clinically appropriate or unnecessary. In order to better understand these issues, a more specific type of service used, i.e. for specific clinical conditions, should be studied; in addition, effectiveness of care provided by different types of facilities should be taken into account.

Second, this study has emphasized the important role of expenditure caused by non-medical items; however, lack of detail of such expenditure made it difficult to propose appropriate policy options to tackle this problem. Further exploration on expenditure caused by non-medical items is needed to obtain in-depth understanding of the problem, in addition to the potential effects of interventions in reducing the cost of obtaining hospital care for older people in rural areas.

Third, this study focussed only on older people under the UC scheme, excluding those covered by the CSMBS. Currently, UC and CSMBS are the two major insurance schemes for the elderly in Thailand. It is believed that the CSMBS provides more generous benefits to its beneficiaries; however, this might not be true for the elderly, especially for ambulatory care. There was evidence to suggest that access to ambulatory care for the elderly covered by the CSMBS was different across income groups (chapter 3). This problem was also raised in the focus group discussions amongst providers. Nevertheless, further research for more in-depth understanding of this issue is needed before a clear recommendation for changes could be made.

Fourth, even though many of the older people in urban areas are the better off, some of them are poor. Evidence from Chapter 3 showed that the poor in Bangkok had the worst access to ambulatory care before the UC scheme. To what extent the UC scheme enabled access and prevented catastrophic expenditure for poor elderly in Bangkok has not been explored. Differences in circumstances between Bangkok and other provinces are likely to have led to different effects. In addition, different effects might be expected in provinces where there are different contexts i.e. shortage of budget but excess health staff; therefore, study in other provinces are needed to assess the effect of the UC scheme on access to care and financial protection for the elderly.

Fifth, whether the UC policy has lead to crowding out the elderly from service utilization is unclear since the study focussed only amongst the elderly and measured services used in aggregate terms. In order to assess any crowding out effect of the UC policy, comparison of service utilization for specific conditions or services such as hypertension or diabetes between the young and the old is needed. Knowing whether an effect exists and reasons



underlying any problem would enable policy makers and managers to redesign the scheme and achieve effective protection for the elderly.

Sixth, the study employed a household survey to identify catastrophic expenditure, but since this is rare, only limited cases and information were found. For further in-depth understanding of the role of insurance and catastrophic health expenditure and its implications on the elderly, a hospital-based approach may be more appropriate, for example collecting cases from tertiary care hospitals for specific conditions, i.e. cancer, heart disease, etc.

Lastly, the issue of financing long-term care has not been explored; the study focussed on only health care covered by the UC scheme, not social care. Care for patients with permanent chronic disabling conditions is solely left to the responsibility of individual families. In view of the rapidly aging population in Thailand and urbanization, the concern is how to handle and maintain the current intra-familial support, particularly when there are more frail elderly; whether the family can cope with the high cost of care for social care, or will need a separate funding system, should be further explored.

### **10.6 Conclusions**

The UC scheme was relatively successful in its implementation for the elderly. Various factors contributed to this success; these included the readiness of the health care system to handle the reform in the study province, a well-established infrastructure of primary care level, and an adequate overall budget to implement the policy. A few problems relating to inequitable health resource distribution, system design, lack of explicit attention to providing geriatric care in primary care settings, and lack of management capability remained.

Equitable access to general ambulatory care was achieved and the well-established infrastructure at the primary care level in rural areas played a crucial role in this success. However, inequitable access to inpatient care remained due to the problem of physical access and the relatively high cost of obtaining hospital care for the rural elderly. Underdevelopment of primary geriatric care and lack of skills of health workers in

providing care specific to the elderly revealed the need for improving this service at primary care level.

The UC scheme substantially reduced the medical care cost for those complying with the requirements for accessing free care; however, expenditure caused by non-medical items remained and played a crucial role. Inequity in out-of-pocket payment remained in spite of the UC scheme. However, given substantial income inequality in the study province and Thailand, this inevitably limits the extent of what the UC scheme can achieve and calls for a broader policy context in order to reduce inequity in income distribution and out-of-pocket payment on health care.

The extremely low number of respondents with catastrophic expenditure was due to the relatively effective protection of the UC scheme in addition to widespread, strong family support in the study province and Thailand generally. However, with the rapid population aging and urbanization in Thailand, maintaining intra-familial support, particularly when there are more frail elderly is a crucial concern.

---

## References

- Abyad, A. (2001) Health care for older persons: A country profile - Lebanon. *Journal of the American Geriatrics Society*, **49**, 1366-1370.
- Aday, A. L. and Andersen, R. (1975) *Access to Medical Care*. Health Administration Press, Ann Arbor.
- Aday, I. A., and Andersen, R.M. (1981) Equity of access to medical care: A conceptual and empirical overview. *Medical care*, **19**, Supplement.
- Andersen, R. and Newman, J. (1973) Societal and individual determinants of medical care utilization in the United States. *Milbank Memorial Fund Quarterly*, **51**, 95-124.
- Andersen, R. (1995) Revisiting the Behavioral Model and Access to Medical Care: Does It Matter? *Journal of Health and Social Behavior*, **36**, 1-10.
- Audenaert, V. (2003) Changes in older people's living arrangements in Flanders, 1993-98. *Ageing and Society*, **23**, 451-469.
- Balabanova, D. and McKee, M. (2002) Understanding informal payments for health care: the example of Bulgaria. *Health Policy*, **62**, 243-273.
- Barer, M. L., Evans, R. G., Hertzman, C. and Lomas, J. (1987) Aging and health care utilization: new evidence on old fallacies. *Soc Sci Med*, **24**, 851-62.
- Barnum, H., Kutzin, J. and Saxenian, H. (1995) Incentives and Provider Payment Methods. *International Journal of Health Planning and Management*, **10**, 23-45.
- Barrientos, A. and Lloyd-Sherlock, P. (2002) Policy Arena: Older and Poorer? Aging and Poverty in the South. *Journal of International Development*, **14**, 1129-1131.
- Barrientos, A., Gorman, M. and Heslop, A. (2003) Old Age Poverty in Developing Countries: Contributions and Dependence in Later Life. *World Development*, **31**, 555 - 570.
- Barros, P. P. (2003) Cream-skimming, incentives for efficiency and payment system. *Journal of Health Economics*, **22**, 419-443.

- Bazargan, M., Bazargan, S. and Baker, R. S. (1998) Emergency department utilization, hospital admissions, and physician visits among elderly African American persons. *Gerontologist*, **38**, 25-36.
- Becker, M., Haefner, D., Kash, S., Kirscht, J., et al. (1977) Selected psychological models and correlates of individual health-related behaviors. *Medical Care*, **15**, 27-46.
- Beguin, A. M., Combes, T., Lutzler, P., Laffond, G., et al. (1997) Health education improves older subjects' attitudes toward urinary incontinence and access to care: a randomized study in sheltered accommodation centers for the aged [letter]. *J Am Geriatr Soc*, **45**, 391-2.
- Blazer, D. G., Landerman, L. R., Fillenbaum, G. and Horner, R. (1995) Health services access and use among older adults in North Carolina: urban vs rural residents. *Am J Public Health*, **85**, 1384-90.
- Bone, M., Bebbington, A., Jagger, C., Morgan, K., et al. (1995) *Health expectancy and its use*. HMSO, London.
- Bowling, A., Bond, M., McKee, D., McClay, M., et al. (2001) Equity in access to exercise tolerance testing, coronary angiography, and coronary artery bypass grafting by age, sex and clinical indications. *Heart*, **85**, 680-686.
- Branch, L., Jette, A., Evashwick, C., Polansky, M., Rowe, G., et al. (1981) Toward understanding elders' health service utilization. *Journal of community Health*, **7**, 80 - 92.
- Breyer, F., Heineck, M. and Lorenz, N. (2003) Determinants of health care utilization by German sickness fund members - with application to risk adjustment. *Health Economics*, **12**, 367-376.
- Broyles, R. W., Narine, L. and Brandt, E. N. (2000) Equity concerns with the use of hospital services by the medically vulnerable. *Journal of Health Care for the Poor and Underserved*, **11**, 343-360.
- Casterline, J. B., Williams, L., Hermalin, A., Chang, M. C., et al. (1991) Differences in the living arrangements of the elderly in four Asian countries: the interplay of constraints and preferences. Population Studies Center, University of Michigan, Ann Arbor, Michigan.
- Centers for Medicare & Medicaid Services (2003) *Medicare Information Resource Centers for Medicare & Medicaid Services*, September 12, 2003 2003 [cited September 29 2003]. Available from <http://cms.hhs.gov/medicare/>.

- Chayovan, N. and Knodel, J. (1996) A report on the survey of the welfare of elderly in Thailand. The Institute of Population Science, Chulalongkorn University, Bangkok.
- Chuprapawan, C. (1997) *A healthsurvey among thai population aged 50 and above in 1995*. Health System Research Institute, Nonthaburi (in Thai).
- Cromwell, J., Pope, G., Burge, R. and Hendricks, A. (1997) *Hospital & physician rate-setting systems: A reference manual for developing & implementing rate structures*. Irwin Professional Publishing. Healthcare Financial Management Association, Chicago.
- De Vos, S. and Sandefur, G. (2002) Elderly living arrangements in Bulgaria, the Czech Republic, Estonia, Finland, and Romania. *European Journal of Population-Revue Europeenne De Demographie*, 18, 21-38.
- Delcheva, E., Balabanova, D. and McKee, M. (1997) Under-the-counter payments for health care: Evidence from Bulgaria. *Health Policy*, 42, 89-100.
- Department of Health (2004) *Elderly Health Services*  
<http://www.info.gov.hk/elderly/english/index.htm>, 22/12/2004 2001 [cited December 24 2004].
- Diehr, P., Martin, D. and Price, K. (1984) Use of ambulatory care services in three provider plans: interaction between patient characteristics and plans. *American Journal of Public Health*, 74, 47.
- Donelan, K., Blendon, R. J., Schoen, C., Binns, K., et al. (2000) The elderly in five nations: The importance of universal coverage. *Health Affairs*, 19, 226-235.
- Dunlop, D. D., Manheim, L. M., Song, J. and Chang, R. W. (2002) Gender and ethnic/racial disparities in health care utilization among older adults. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 57, S221-S233.
- Ensor, T. and Savelyeva, L. (1998) Informal payments for health care in the Former Soviet Union: some evidence from Kazakstan. *Health Policy and Planning*, 13, 41-49.
- Ensor, T. (2004) Informal payments for health care in transition economies. *Social Science & Medicine*, 58, 237-246.
- Evashwick, C., Rowe, G., Diehr, P. and Branch, L. (1984) Factors Explaining the Use of Health Care Services by the Elderly. *Health Service Research*, 19, 357-382.

- Federman, A. D., Adams, A. S., Ross-Degnan, D., Soumerai, S. B., et al. (2001) Supplemental insurance and use of effective cardiovascular drugs among elderly Medicare beneficiaries with coronary heart disease. *Jama-Journal of the American Medical Association*, **286**, 1732-1739.
- Fernandez-Mayoralas, G., Rodriguez, V. and Rojo, F. (2000) Health services accessibility among Spanish elderly. *Social Science and Medicine*, **50**, 17-26.
- Frankenberg, E., Chan, A. and Ofstedal, M. B. (2002) Stability and change in living arrangements in Indonesia, Singapore, and Taiwan, 1993-99. *Population Studies-a Journal of Demography*, **56**, 201-213.
- Fries, J. (1980) Aging, natural death, and the compression of morbidity. *The New England Journal of Medicine*, **303**, 130 - 135.
- Fries, J. (1989) The Compression of Morbidity: Near or Far? *The Milbank Quarterly*, **67**, 208-231.
- Fuchs, V. R. (1984) "Though Much Is Taken": Reflections on Aging, Health, and Medical Care. *Milbank Memorial Fund Quarterly/Health and Society*, **62**, 143-166.
- Glaser, W. A. (1991) *Health Insurance in Practice: international variations in financing, benefits, and problems*. Jossey-Boss Publishers, San Francisco.
- Glendinning, C., Jacobs, S., Alborz, A. and Hann, M. (2002) A survey of access to medical services in nursing and residential homes in England. *British Journal of General Practice*, **52**, 545-548.
- Goddard, M. and Smith, P. (2001) Equity of access to health care services: Theory and evidence from the UK. *Social Science & Medicine*, **53**, 1149-1162.
- Gross, D. J., Alecxih, L., Gibson, M. J., Corea, J., et al. (1999) Out-of-pocket health spending by poor and near-poor elderly Medicare beneficiaries. *Health Serv Res*, **34**, 241-54.
- Gruenber, E. (1977) The Failure of Success. *Milbank Memorial Fund Quarterly/Health and Society*, **Winter**, 3 - 25.
- Grundy, E. (1992) The Epidemiology of aging in (Brocklehurst, J., Tallis, R. and Fillit, H.) *Textbook of geriatric medicine and gerontology*. 3-20 Churchill Livingstone, Edinburgh.

- Ha, N. T. H., Berman, P. and Larsen, U. (2002) Household utilization and expenditure on private and public health services in Vietnam. *Health Policy and Planning*, 17, 61-70.
- Haan, M. N., Selby, J. V., Quesenberry, C. P., Jr., Schmittiel, J. A., Fireman, B. H., et al. (1997) The impact of aging and chronic disease on use of hospital and outpatient services in a large HMO: 1971-1991 [see comments]. *J Am Geriatr Soc*, 45, 667-74.
- Health Insurance Office (1997) Annual Report of Health Insurance Office 1994 - 1996. Ministry of Public Health, Nonthaburi (in Thai).
- Health Insurance Office (2002) Providing Health Insurance Under the 8th 5-year National Health Plan. Ministry of Public Health, Nonthaburi (in Thai).
- Hermalin, A., Roan, C. and Perez, A. (1998) The Emerging Role of Grandparents in Asia. Population Studies Center, Michigan.
- Hermalin, A. (2000) Aging in Asia: Facing the Crossroads. Population Studies Center, Michigan.
- Hermalin, A., Ofstedal, M. B. and Mehta, K. (2002) The Vulnerable and their Potential Disadvantages in (Hermalin, A.) *The Well-Being of the Elderly in Asia: A Four-Country Comparative Study*. Chapter 11 The University of Michigan Press, Michigan.
- HIO (2002) Expansion of health insurance coverage among the Thais under the 8th 5-year National Development Plan (1997 - 2001). Health Insurance Office, Ministry of Public Health, Nonthaburi (in Thai).
- Hongvivatana, T. and Manopimoke, S. (1991) A baseline survey of preference for rural health insurance. Center for Health Policy Studies, Faculty of Social Science and Humanities, Mahidol University, Bangkok.
- HSRI (2000) Preliminary results of the evaluation of the 1999 National Essential Drug List. Health System Research Institute, Nonthaburi (in Thai).
- HSRI (2003) The First Evaluation of the Universal Health Coverage Policy. Health System Research Institute, Nonthaburi (in Thai).
- Hurd, M. D. and McGarry, K. (1997) Medical insurance and the use of health care services by the elderly. *Journal of Health Economics*, 16, 129-154.

- Jarvis, C. and Tinker, A. (1999) Trends in old age morbidity and disability in Britain. *Ageing and Society*, 19, 603-627.
- JICWELS (1999) *Textbook for the 8th study Programme for the Asian Social Insurance Administrators, 27 September - 8 October 1999*. Japan International Corporation and Welfare Services, Tokyo.
- Jitapunkul, S., Bunnag, S. and Ebrahim, S. (1993) Health-Care for Elderly People in Developing-Countries - a Case-Study of Thailand. *Age and Ageing*, 22, 377-381.
- Jitapunkul, S. and Bunnag, S. (1998) *Ageing in Thailand 1997*. Thai Society of Gerontology and Geriatric Medicine, Bangkok.
- Jitapunkul, S., Kunanusont, C., Poolcharoen, W. and Suriwongpaisal, P. (1999a) *Health Problems of Thai Elderly*. Thai Health Research Institute, The National Health Foundation, Bangkok (in Thai).
- Jitapunkul, S., Songkhla, M. N., Chayovan, N., Chirawatkul, A., et al. (1999b) A national survey of health-service use in Thai elders. *Age and Ageing*, 28, 67-71.
- Jongudoumsuk, P. (2002) Achieving Universal Coverage of Health Care in Thailand Through 30 Baht Scheme. Health Care Reform Office, Ministry of Public Health, Nonthaburi.
- Kamnuansilpa, P., Wongthanavas, S., Bryant, J. and Prohmmo, A. (1999) Health Policy evaluation for the Elderly Persons. Khonkaen University, Khonkaen.
- Kane, N. (1995) Costs, Productivity and Financial Outcomes of Managed Care in (Saltman, R. B. and Otter, C. v.) *Implementing Planned Markets in Health Care: Balancing Social and Economic Responsibility*. Open University Press, Buckingham, England.
- Kassab, C., Luloff, A. E., Kelsey, T. W. and Smith, S. M. (1996) The influence of insurance status and income on health care use among the nonmetropolitan elderly. *J Rural Health*, 12, 89-99.
- Kasturi, S. (1994) *Aging: Debates on Demographic Transition and Social Policy*. Zed Books Ltd., London.
- Kawabata, K., Xu, K. T. and Carrin, G. (2002) Preventing impoverishment through protection against catastrophic health expenditure. *Bulletin of the World Health Organization*, 80, 612.



- Killingsworth, J. R., Hossain, N., Hedrick-Wong, Y., Thomas, S. D., et al. (1999) Unofficial fees in Bangladesh: price, equity and institutional issues. *Health Policy and Planning*, **14**, 152-163.
- Kinsella, K. (1997) Demographic aspects in (Ebrahim, S. and Kalache, A.) *Epidemiology in Old Age*, chapter 4 BMJ publishing Group, London.
- Kirkwood, T. (1997) Mechanism of Aging in (A, E. S. a. K.) *Epidemiology in Old Age*. BMJ. Publishing Group, London.
- Kleinman, J. C., Gold, M. and Makuc, D. (1981) Use of Ambulatory Medical Care by the Poor: Another Look at Equity. *Medical Care*, **19**.
- Knodel, J., Chayovan, N. and Siriboon, S. (1992) The familial support system of Thai elderly: an overview. *Asia Pacific Population Journal*, **7**, 105-26.
- Knodel, J. and Chayovan, N. (1997a) Family support and living arrangements of Thai elderly. *Asia Pacific Population Journal*, **12**, 51-68.
- Knodel, J. and Chayovan, N. (1997b) Persistence and Change in the Living Arrangements and Support of Thai Elderly. Population Studies Center, University of Michigan, Ann Arbor.
- Knodel, J., Chayovan, N., Graiurapong, S. and Suraratdecha, C. (1999) Aging in Thailand: An Overview of Formal and Informal Support. Population Studies Center, University of Michigan, Michigan.
- Knodel, J., Friedman, J., Anh, T. S. and Cuong, B. T. (2000) Intergenerational exchanges in Vietnam: Family size, sex composition, and the location of children. *Population Studies-a Journal of Demography*, **54**, 89-104.
- Knodel, J., VanLandingham, M., Saengtienchai, C. and Im-em, W. (2001) Older people and AIDS: quantitative evidence of the impact in Thailand. *Social Science & Medicine*, **52**, 1313-1327.
- Kumnuansilpa, P., Wongthanavas, S., Bryant, J. and Prohmno, A. (2000) An Assessment of the Thai Government's Health Services for the Aged. *Asia-Pacific Population Journal*, **15**, 3-18.
- Kunemund, H. and Rein, M. (1999) There is more to receiving than needing: theoretical arguments and empirical explorations of crowding in and crowding out. *Ageing and Society*, **19**, 93-121.

- Kutzin, J. (1998) Enhancing Insurance Functions of Health System: A Proposed Conceptual Framework in (Nittayaramphong, S. and Mills, A.) *Achieving Universal Coverage of Health Care*. Office of Health Care Reform, Ministry of Public Health, Thailand, Bangkok.
- Kutzin, J. (2000) Towards Universal Health Care Coverage: A Goal-oriented Framework for Policy Analysis. Health, Nutrition and Population (HNP) Discussion Paper, World Bank, Washington DC.
- Kutzin, J. (2001) A descriptive framework for country-level analysis of health care financing arrangements. *Health Policy*, 56, 171-204.
- Kwon, S. (2002) Achieving health insurance for all: Lessons from the Republic of Korea. Social Security Policy and Development Branch, International Labour Office, Geneva.
- Le Grand, J. (1978) The distribution of public expenditure: The case of health care. *Economica*, 45, 125-142.
- Le Grand, J. (1982) *The Strategy of Equality: Redistribution and the Social Services*. Allen and Unwin, London.
- Limwattananon, S. (2001) Traffic Accident Insurance in (Thamtacharee, J.) *Health Insurance System in Thailand*. Health System Research Institute, Nonthaburi (in Thai).
- Liu, G. G., Zhao, Z. Y., Cai, R. H. and Yamada, T. (2002) Equity in health care access to: assessing the urban health insurance reform in China. *Social Science & Medicine*, 55, 1779-1794.
- Liu, K. and Perozek, M. (1991) Catastrophic acute and long-term care cost: Risks faced by disable elderly persons. U.S. Department of Health and Human Services, <http://aspe.hhs.gov/daltcp/reports/catacues.htm>.
- Lloyd-Sherlock, P. (1997) Healthcare provision for elderly people in Argentina: The crisis of PAMI. *Social Policy & Administration*, 31, 371-389.
- Lloyd-Sherlock, P. (2002a) Formal Social Protection for Older People in Developing Countries: Three Different Approaches. *Int Soc.Pol.*, 31, 695 - 713.
- Lloyd-Sherlock, P. (2002b) Social policy and population ageing: challenges for north and south. *International Journal of Epidemiology*, 31, 754-757.

- Lloyd-Sherlock, P. (2003) Financing health services for pensioners in Argentina: a salutary tale. *International Journal of Social Welfare*, **12**, 24-30.
- Lubitz, J. D. and Riley, G. F. (1993) Trends in Medicare payments in the last year of life. *N Engl J Med*, **328**, 1092-6.
- Lund, F. (2002) "Crowding in" care, security, and macro-enterprise formation - revisiting the role of the state in poverty reduction, and in development. *Journal of International Development*, **14**, 681-694.
- Makinen, M., Waters H., Rauch, M., Almagambetova, N., et al. (2000) Inequalities in health care use and expenditures: empirical data from eight developing countries and countries in transition. *Bull World Health Organ*, **78**, 55-65.
- Manton, K. G. (1982) Changing Concepts of Morbidity and Mortality in the Elderly Population. *Milbank Memorial Fund Quarterly/Health and Society*, **60**, 183-244.
- McWilliams, J. M., Zaslavsky, A. M., Meara, E. and Ayanian, J. Z. (2003) Impact of Medicare coverage on basic clinical services for previously uninsured adults. *Jama-Journal of the American Medical Association*, **290**, 757-764.
- Melchior, H., Kumar, V., Muller, N., van Maanen, H., et al. (1998) National public health policies for prevention and care in urinary incontinence in the elderly. *World Journal of Urology*, **16**, S71-S73.
- Miller, R. H. (1992) Access to ambulatory care among noninstitutionalized, activity-limited persons 65 and over. **34**, 1237-47.
- Mills, A., Bennett, S. and Russell, S. (2001) *The Challenge of Health Sector Reform: What Must Government Do?* Palgrave, Hampshire.
- Mooney, G. H. (1983) Equity in health care: confronting the confusion. *Effective health care*, **1**, 179-184.
- MOPH (2001) Guideline for the management of Universal Coverage policy during the transitional period. Ministry of Public Health, Nonthaburi (in Thai).
- Murray, C. J., Knaul, F., Musgrove, P., Xu, K., et al. (2000) Defining and Measuring Fairness in Financial Contribution to Health System. World Health Organization, Geneva.

- National Health Security Office (2004) *Benefit Package of the National Health Insurance Scheme* [http://www.nhso.go.th/30baht\\_English/indexbenefit.htm](http://www.nhso.go.th/30baht_English/indexbenefit.htm), 2004 [cited access date 29/01/04 2004].
- NESDB (2003) Thailand's Key Economic Indicators. the Office of National Economic and Social Development Borad, Nonthaburi.
- NSO (1976) The 1974 - 1976 Survey of Population Change. National Statistic Office, The Office of Prime Minister, Bangkok.
- NSO (1986) The 1985 - 1986 Survey of Population Change. National Statistic Office, The Office of Prime Minister, Bangkok.
- NSO (1991) The 1991 Health and Welfare Survey. National Statistics Office, Office of Prime Minister, Bangkok.
- NSO (1996a) The 1996 Health and Welfare Survey. National Statistics Office, Office of Prime Minister, Bangkok.
- NSO (1996b) The 1995 - 1996 Survey of Population Change. National Statistic Office, The Office of Prime Minister, Bangkok.
- NSO (2001) The 2001 Health and Welfare Survey. National Statistics Office, The Office of Prime Minister, Thailand, Bangkok.
- NSO (2003) *The 2002 Elderly Survey* [http://www.nso.go.th/thai/stat/stat\\_23/toc\\_1.html](http://www.nso.go.th/thai/stat/stat_23/toc_1.html), 2002 [cited Access on 23/11/03 2003].
- O'Neill. C, G. L., Avery. AJ and Boot. D, a. T. K. (2000) Age and proximity to death as predictors of GP care costs: results from a study of nursing home patients. *Health Economics*, 9, 733-738.
- Palloni, A. (2000) Living Arrangements of Older Persons. Center for Demography and Ecology working paper No. 2000-02, University of Wisconsin, Wisconsin.
- Pannarunothai, S. and Mills, A. (1997) The poor pay more: Health-related inequality in Thailand. *Social Science & Medicine*, 44, 1781-1790.
- Pannarunothai, S. and Kongsawat, S. (2001) Cost per DRG Relative Weight for Regional, General, and Community Hospitals. *Journal of Health Science*, 3, 391-399.

- Pannarunothai, S. and Patmasiriwat, D. (2001) Macro-economic indices for measuring equity in health finance and delivery 1986-1998. Center for Health Equity Monitoring, Faculty of Medicine, Naresuan University, Pitsanulok.
- Pannarunothai, S., Patmasiriwat, D. and Srithamrongsawat, S. (2001) Letter to Editor, Budget for implementing the Universal Coverage Policy: Weakness of the 1,202 Baht Per Capita. *Journal of Health Science*, 10, 1-6 (in Thai).
- Pannarunothai, S., Patmasiriwat, D., Kongsawat, S., Srithamrongsawat, S., et al. (2002) Sustainable Universal Health Coverage: Household Met Need. Centre for Health Equity Monitoring (CHEM), Naresuan University, Pitsanulok.
- Patel, V. and Prince, M. (2001) Ageing and mental health in a developing country: Who cares? Qualitative studies from Goa, India. *Psychological Medicine*, 31, 29-38.
- Prescott, N. and Nichols, L. M. (1997) International Comparison of Medical Savings Accounts in (Prescott, N.) *Choices in Financing Health Care and Old Age Security*. The World Bank, Singapore.
- Ranson, M. (2002) Reduction of Catastrophic Health Care Expenditures by a Community-based Health Insurance Scheme in Gujarat, India: Current Experiences and Challenges. *Bulletin of the World Health Organization*, 80, 613-621.
- Ravallion, M. and Lokshin, M. (2000) Identifying Welfare Effects from Subjective Questions. World Bank, Washington D.C.
- Rice, N. and Smith, P. C. (2001) Capitation and risk adjustment in health care financing: An international progress report. *Milbank Quarterly*, 79, 81-+.
- Rosenstock, I. (1966) Why people use health services. *Milbank Memorial Fund Quarterly*, 44, 128 - 62.
- Rossiter, L. and Wilensky, G. (1983) A reexamination of the use of physician services: the role of physician-initiated demand. *Inquiry*, 20, 162-72.
- Rubin, R. M., Koelln, K. and Speas, R. K. (1995) Out-of-Pocket Health Expenditures By Elderly Households - Change Over the 1980s. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences*, 50, S291-S300.
- Russell, S. and Gilson, L. (1995) User Fees At Government Health Services: Is Equity Being Considered? PHP Department Publication No. 15, London School of Hygiene & Tropical Medicine, London.

- Sauerborn, R., Adams, A. and Hien, M. (1996) Household strategies to cope with the economic costs of illness. *Social Science & Medicine*, **43**, 291-301.
- Schellhorn, M., Stuck, A. E., Minder, C. E. and Beck, J. C. (2000) Health Services Utilization of Elderly Swiss: Evidence from Panel Data. *Health Economics*, **9**, 533-545.
- Schoen, C., Davis, K., DesRoches, C., Donelan, K., et al. (2000) Health insurance markets and income inequality : findings from an international health policy survey. *Health Policy*, **51**, 67-85.
- Scitovsky, A. A. (1984) "The High Cost of Dying": What Do the Data Show? *Milbank Memorial Fund Quarterly/Health and Society*, **62**, 591-607.
- Scitovsky, A. A. (1988) Medical Care in the Last Twelve Months of Life: The Relation between Age, Functional Status, and Medical Care Expenditure. *The Milbank Quarterly*, **66**, 640 - 660.
- Scitovsky, A. A. (1994) "The High Cost of Dying" Revisited. *The Milbank Quarterly*, **72**, 561 - 591.
- Selden, T. M. and Banthin, J. S. (2003) Health Care Expenditure Burdens among Elderly Adults: 1987 and 1996. *Medical Care*, **41**, III-13 - III-23.
- Sen, K. (1994) *Aging: Debates on Demographic Transition and Social Policy*. Zed Books Ltd., London.
- Sheldon, T. A. and Smith, P. C. (2000) Equity in the Allocation of Health Care Resources. *Health Economics*, **9**, 571-574.
- Songer, T., LaPorte, R., Lave, J., Dorman, J., et al. (1997) Health Insurance and the Financial Impact of IDDM in Families with a Child with IDDM. *Diabetes Care*, **20**, 577-584.
- Srithamrongsawat, S. (2000) Health Status and Policy Direction for Health Insurance of the Elderly in Thailand Part 2: Providing Medical Welfare for the Elderly in Thailand. *Journal of Gerontology and Geriatric Medicine*, **1**, 44-52 (in Thai).
- Srithamrongsawat, S., Kongsawat, S. and Krailas, N. (2000) Resource Allocation: Merging Sources of Finance and Reforming Payment Mechanisms for Health Services. Health Care Reform Office, MOPH, Nonthaburi(in Thai).

- Srithamrongsawat, S. (2002) The Health Card Scheme: A Public Subsidized Voluntary Health Insurance Scheme in (Pramualratana, P. and Wibulpolprasert, S.) *Health Insurance System in Thailand*. Health System Research Institute, Nonthaburi.
- Srithamrongsawat, S. and Lapying, P. (2002) Evaluation of the Universal Health Coverage Policy Implementation: A case study in Samut Sakorn, Phuket, Sukhothai, and Ubon Ratchathani province. Center for Health Equity Monitoring (CHEM), Naresuan University, Pitsanulok (in Thai).
- Srithamrongsawat, S. and Lapying, P. (2003) Health Insurance Benefits Management under the Universal Health Care Coverage Project in the First-year Implementation: A Case Study in Samut Sakorn, Phuket, Sukhothai, and Ubon Ratchathani. *Journal of Health Science*, 12, 729-745 (in Thai).
- Stoddart, H., Donovan, J., Whitley, E., Sharp, D., et al. (2001) Urinary incontinence in older people in the community: a neglected problem? *British Journal of General Practice*, 51, 548-552.
- Stuart, B. and Grana, J. (1995) Are Prescribed and Over-the-Counter Medicines Economic Substitutes - a Study of the Effects of Health-Insurance On Medicine Choices By the Elderly. *Medical Care*, 33, 487-501.
- Stuart, B. and Grana, J. (1998) Ability to pay and the decision to medicate. *Medical Care*, 36, 202-211.
- Tangcharoensathien, V., Tirawattananon, Y. and Prakongsai, P. (2001) Budget for Universal Health Care Coverage: How was the 1,202 Baht Copitation Rate Derived? *Journal of Health Science*, 10, 381-390.
- Tangcharoensathien, V., Chitparnee, V., Makkrajang, C. and Tatiyanonpong, S. (2003) National Health Accounts in Thailand 1994-2001. International Health Policy Program, Nonthaburi (in Thai).
- Teo, P., Chan, A. and Straughan, P. (2003a) Providing health care for older persons in Singapore. *Health Policy*, 64, 399-413.
- Teo, P., Graham, E., Yeoh, B. S. A. and Levy, S. (2003b) Values, change and inter-generational ties between two generations of women in Singapore. *Aging & Society*, 23, 327-347.
- The Committee of Universal Coverage Policy Development (2001) A Proposal for Universal Health Coverage System. Health System Research Institute, Nonthaburi (in Thai).

- Thompson, R. and Witter, S. (2000) Informal payments in transitional economies: Implications for health sector reform. *International Journal of Health Planning and Management*, **15**, 169-187.
- Tisayaticom, K. and Tonimitr, D. (2001) Costs and unit cost of service provision in public facilities in fiscal year 2000 in six provinces under the SIP. Health Insurance Office, Ministry of Public Health, Nonthaburi (in Thai).
- UN (1998) *World Population Prospects: the 1996 revision*. Department of Economic and Social Affairs, Population Division, United Nations, New York.
- United Nations (2002) *World Population Ageing 1950 - 2050*. Department of Economic and Social Affairs, Population Division, New York.
- van Barneveld, E. M., van Vliet, R. and van de Ven, W. (2001) Risk sharing between competing health plans and sponsors. *Health Affairs*, **20**, 253-262.
- Van der Gaag, J. and Prescott, N. (1998) Health Care for Aging Populations: Issues and Options in Choices in Financing Health Care and Old Age Security. November 8, 1997 Singapore World Bank discussion paper No. 392
- Van Doorslaer, E. and Wagstaff, A. (1993) Equity in the finance of health care: methods and findings in (Van Doorslaer, E., Wagstaff, A., and Rutten, F.) *Chapter 3 in the Equity in the finance and delivery of health care: an international perspective*. Oxford University Press, London.
- Van Doorslaer, E. and Wagstaff, A. (1998) Equity in the Finance and Delivery of Health Care: an Introduction to the ECuity Project in (Barer, M. L., Getzen, T. E. and Stoddart, G. L.) *Health, Health Care and Health Economics: Perspectives and Distribution*. John Wiley & Sons. Ltd., Chichester.
- Victor, C. and Vetter, N. (1986) Poverty, Disability and Use of Services by the Elderly: Analysis of the 1980 General Household Survey. *Social Science and Medicine*, **22**, 1087 - 1091.
- Wagstaff, A. and Van Doorslaer, E. (1993a) Equity in the finance and delivery of health care: concepts and definitions in (Van Doorslaer, E., Wagstaff, A. and Rutten, F.) *Chapter 2 in the Equity in the finance and delivery of health care: an international perspective*. Oxford University Press, London.
- Wagstaff, A. and Van Doorslaer, E. (1993b) Equity in the delivery of health care: methods and findings in (Van Doorslaer, E., Wagstaff, A., and Rutten, F.) *Chapter 4 in the*



- Equity in the finance and delivery of health care: an international perspective.* Oxford University Press, London.
- Wagstaff, A. (2000) Equity in Health Care Finance and Delivery in (Culyer, A. J. and Newhouse, J. P.) *Handbook of Health Economics, Volume 1.* Elsevier Science B.V., Amsterdam.
- Walker, A. and Maltby, T. (1997) *Ageing Europe.* Open University Press, Buckingham.
- Walter-Ginzburg, A., Chetrit, A., Medina, C., Blumstein, T., et al. (2001) Physician visits, emergency room utilization, and overnight hospitalization in the old-old in Israel: The cross-sectional and longitudinal aging study (CALAS). *Journal of the American Geriatrics Society*, **49**, 549-556.
- Wan, T. and Broida, J. (1985) Socio-medical determinants of hospital utilization in Quebec, Canada, 1970-1975. *International Journal of Health Services*, **16**, 43-55.
- Wan, T. T. H. (1982) Use of Health Services by the Elderly in Low Income Community. *Milbank Memorial Fund Quarterly/Health and Society*, **60**, 82 - 107.
- Waters, H. R. (2000) Measuring equity in access to health care. *Soc. Sci. Med.*, **51**, 599-612.
- Wennberg, J., Barnes, B. and Zubkoff, M. (1982) Professional uncertainty and the problem of supplier-induced demand. *Social Science and Medicine*, **16**, 811-24.
- WHO (1978) *Health For All by the Year 2000.* World Health Organization, Geneva.
- WHO (1998a) World Health Report 1998- Life in the twenty-first century: A Vision for All. World Health Organization, Geneva.
- WHO (1998b) Health for all in the 21st century. World Health Organization, Geneva.
- WHO (1999) *The World Health Report 1999: Making A Difference.* World Health Organization, Geneva.
- WHO (2000) *The World Health Report 2000: Health System: Improving Performance.* World Health Organization, Geneva.
- WHO (2003a) Primary Health Care: A Framework for Future Strategic Directions. World Health Organization, Geneva.

- 
- WHO (2003b) *The World Health Report 2003- Shaping the Future*. World Health Organization, Geneva.
- Wibulpolprasert, S. (2002) *Thailand Health Profile 1999-2000*. Bureau of Policy and Strategy, Ministry of Public Health, Nonthaburi.
- Wofford, J. L., Schwartz, E. and Byrum, J. E. (1993) The role of emergency services in health care for the elderly: a review. *J Emerg Med*, **11**, 317-26.
- Wolinsky, F. D., Miller, D. K., Prendergast, J. M., Creel, M. J., et al. (1983) Health Service Utilization among the Noninstitutionalized Elderly. *Journal of Health and Social Behavior*, **24**, 325-337.
- Wyszewianski, L. (1986a) Financial catastrophic and high-cost cases: definitions, distinction, and their implications for policy formulation. *Inquiry*, **23**, 382-394.
- Wyszewianski, L. (1986b) Families with Catastrophic Health Care Expenditures. *Health Services Research*, **21**, 617-633.
- Xu, K., Evans, D. B., Kawabata, K., Zeramini, R., et al. (2003) Household catastrophic health expenditure: a multicountry analysis. *Lancet*, **362**, 111-117.

## **APPENDIX 1: DETERMINANTS OF SERVICE UTILIZATION AMONG THE ELDERLY**

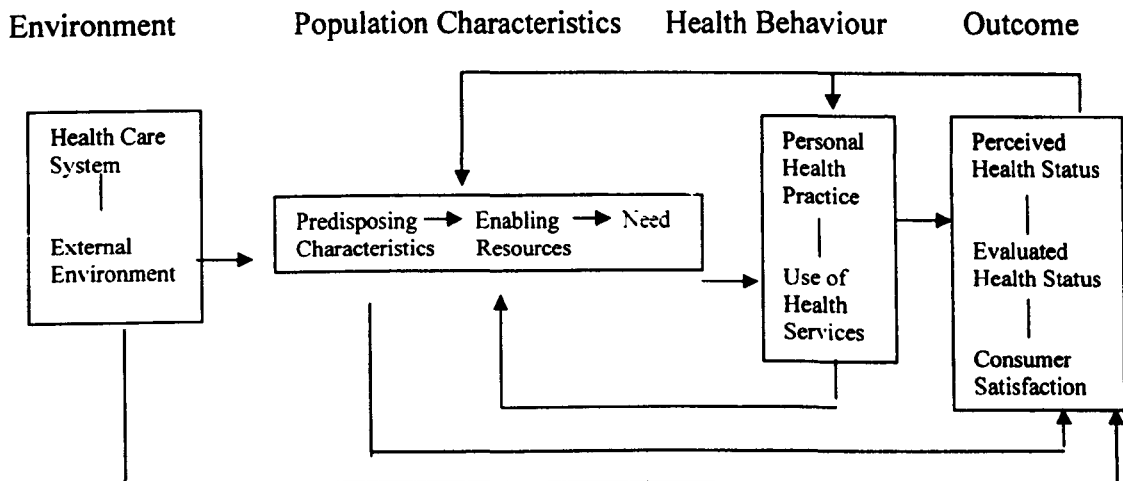
Three broad approaches have been used in studying determinants of health service use by the elderly: the behaviour model, the health belief model, and the organizational constraints model. The Andersen Behaviour model is the most frequently used, and suggests that health service use is a function of three classes of variables. Firstly, personal attributes that may predispose individuals to seek care; secondly, enabling resources such as income, insurance coverage, regular source of care, and barriers of care; finally, need-for-care factors as evidenced by subjective (perceived) health and objective (assessed) health status and functional level (Andersen and Newman, 1973; Andersen, 1995). The Health Belief model suggests that health services use is determined by perceived susceptibility and severity of a health problem, perceived benefits and barriers to taking action, and cues that instigate appropriate behaviour (Rosenstock, 1966; Becker et al., 1977). The Organizational Constraints model gives emphasis to incentives of both provider and consumer. It suggests that variation in use is indicated by the level of market competition and incentives for developing cost-effective alternatives for care, and personal choice or decision factors (Wennberg et al., 1982; Rossiter and Wilensky, 1983; Diehr et al., 1984; Wan and Broida, 1985). Comparing these three models, the Behaviour model is the more comprehensive and frequently used since health beliefs, and organizational structure variables, have been included in the most recent model. The following part will briefly review the Behaviour model, empirical evidence of factors determining services use, and methodological issues.

### **A1.1 The Behaviour Model**

Population characteristics, predisposing factors, enabling resources, and need, are the main determinants of health behaviour. Predisposing characteristics are those factors that determine health care need and an individual's capability to deal with it, such as demographic factors, social structure, health belief, and psychological characteristics. Demographic factors such as age and gender represent biological imperatives suggesting

the likelihood that people will need health care, while social structure, measured by factors determining the status of a person in the community, will ascertain his or her ability to cope with presenting problems and to command resources to deal with these problems (Andersen, 1995). Social structure variables include individual education, occupation, ethnicity, and social network of an individual's family in a particular community. Health beliefs, such as attitudes and values about health, welfare programs, health services, aging, and death, may influence an individual's subsequent perception of need and use of services. Finally, psychological characteristics such as mental dysfunction, cognitive impairment, and autonomy of individual elderly will also determine their perception about need and ability to deal with problems and use of services.

**Figure A1. 1 The Behaviour Model phase 4.**



Source: Andersen, 1995

To enable people to use health services, first of all, services have to be available, and then people must have the means and know-how to get to those services and use them. Insurance coverage will reduce financial barriers in access to care, while uninsured persons have to rely on household disposable income, possessions, or loans. Social networks and welfare programs will play a role for those who are less able to pay. How well people can cope with these problems depends on their social structure as mentioned above. In addition, transportation, availability of people to accompany an elderly person to visit a health facility, and family support are also crucial, especially for the elderly and disabled persons.

How people view their own general health and functional state, as well as how they experience symptoms of illness, pain, and worries about their health, and whether or not they judge their problems to be of sufficient importance and magnitude to seek help, will directly determine their service use. Perceived need will better help us to understand care-seeking and adherence to a medical regimen, while evaluated need will be more closely related to the kind and amount of treatment that will be provided after a patient has presented to a medical care provider (Andersen, 1995). All the population characteristics mentioned above will directly influence personal health practice and health services use, such as healthy or risky behaviour, use of acute care and long-term care, etc.

Direct outcomes of service use are health status and satisfaction with services received, which in turn affect subsequent health behaviour and population characteristics. Aside from various determinants, improving health may be the direct effect of health care use for particular conditions, such as relieving symptoms, or being cured from some illnesses. However, use of service itself for chronic diseases, such as hypertension and diabetes, will also reveal the need for care since they are not cured. Use of services for catastrophic illness may worsen the economic situation of an individual/family, and discourage their use in the next episode of illness.

External factors such as the health care system and other environmental aspects also influence population characteristics and the health status of the individual. Appropriate and more equitable distribution of health resources will enable people to use health services and enhance equity in health care. Health care financing policies such as expansion of insurance coverage to protect the poor will enable health care use, while imposing user fees may reduce it. Healthy public policies, such as smoking and environment control, also directly affect health behaviour and the health status of the individual.

### **A1.2 Empirical studies of factors determining health service use among the elderly**

A list of studies in relation to factors determining service utilization among elderly people during 1981–2001 is summarized in Tables A1.1–A1.3. Nearly all of them were conducted in the U.S., with only a few conducted elsewhere such as Spain (Fernandez-Mayoralas et

al., 2000), Switzerland (Schellhorn et al., 2000), Thailand (Jitapunkul et al., 1999), and Britain (Bowling et al., 1991).

Most studies employed available cross-sectional databases from other studies; hence, only available predisposing, enabling, and need factors were included in these studies. The usual demographic variables included in most studies were age, sex, marital status, educational level, ethnicity, place of birth, living arrangement, working status, and residential area (rural / urban / underprivileged area). Stoller (1982) also included health care attitudes among the elderly, while Wolinsky et al. (1983) included nutritional knowledge in their study. Well-known enabling variables, such as having a regular physician, income, type and hierarchy of insurance covered (Medicare + private insurance / Medicare + Medicaid / Medicare only / uninsured), are usually included. Some other enabling factors were also included in some studies, such as problems in transportation (Branch et al., 1981), household possessions (Jitapunkul et al., 1999), receiving of case management and coordination of services (Coulton and Frost, 1982), social support and economic deprivation (Arling, 1985). Common need variables included in these studies were perceived illness or health problems, serious illness (illness with confined to bed or absence from work), presenting of chronic conditions, self-perceived health, limitations of Activity of Daily Living (ADL) and Instrumental activities of ADL (IADL), type and number of medicines taken. Some studies also included psychological, emotional symptoms (Coulton and Frost, 1982; Wolinsky et al., 1983; Arling, 1985; Walter-Ginzburg et al., 2001), and health risk behaviours, such as use of preventive services (Evashwick et al., 1984; Walter-Ginzburg et al., 2001), smoking and alcohol drinking (Jitapunkul et al., 1999; Fernandex-Mayoralas et al., 2000), and nutritional risks (Wolinsky et al., 1983). The relative importance of these factors in explaining the variance in service use is determined by using various multivariate statistical techniques such as multiple regression analysis, path analysis, multiple classification analyses, discriminant functional analysis, and logistic regression analysis.

### **Physician services**

Two main measurements were employed in studying physician utilization, any physician use and number of visits. A more specific service was also focused on in some studies,

such as emergency care and specialist care (Table A1.1). All studies revealed that all the three variable groups influenced health services use among the elderly; however, they had only a modest explanatory power – only 30% in this review or approximately 40% in Hulka and Wheat (1985). Need variables alone (such as perceived illness, perceived health, existence of chronic conditions, limitation of physical activities) played a greater role in determining physician use, about two-thirds of the variance. Enabling factors such as insurance coverage, income, and regular physician played some role, while predisposing factors played a limited role in determining physician services use.

Wolinsky et al. (1983) found that need characteristics accounted for 74% of the explanation of service use among the elderly, while enabling resources accounted for 22% and predisposing variables 4%; however, enabling and predisposing variables had increased roles in determining emergency services use, 25 and 17% respectively in the same study. Arling (1985) found that medical conditions and ADL impairment had 73% explanatory power and an additional 12% of explanation was added by psychosomatic and emotional symptoms, 9% by economic deprivation and social support, and another 6% by age and education. Stoller (1982) found a different result; predisposing factors including attitudes, social structure, and demographic factors explained 48% of any physician contact, both assessed and perceived need only 24%; however, need variables had an increased role to 42% and 38% (assessed and perceived, respectively) for enabling factors for the volume of physician visits. He concluded that need factors made a greater contribution to explaining volume of visits than in predicting initial contact, while attitudinal and background characteristics were more important in explaining initial contact than volume of visits.

Jitapunkun et al. (1999) and Fernandex-Mayoralas et al. (2000) used a countrywide survey and similar method of analysis, dividing the analysis into two stages. The first sought to establish the existence of univariate / bivariate associations for each health contact and only related variables were included in the second step. Jitapunkun et al. employed logistic regression as the main analytical tool, while Fernandex-Mayoralas et al. employed discriminant analysis, a statistical technique for classifying and allocating individuals to groups given known characteristics. Jitapunkun et al. found that nearly half of the elderly in 1995 in Thailand did not use the state's free medical care and still relied on their children's support in paying for health care. Health service use in their study was

determined by living in a rural area, being well educated and better off, not drinking alcohol, as well as having serious illness. In addition, with increasing age, the elderly were less likely to seek formal treatment. However, health insurance status was not included in the analysis. In their Spanish study, Fernandex-Mayoralas et al. found that number of types of medicine taken, poorer perceived state of health, and having one main activity restricted, best discriminated users and nonusers of physician services. Another two need variables which could discriminate user and nonuser with lower weights were housework limitation and confined to bed by health problem; one predisposing variable was also included – unemployed elderly were more likely to visit a doctor. In the later study, 62% of the users of physician services could be correctly classified with this discriminant function. In contrast to the Jitapunkun study, Nemet and Bailey (2000) found that having a regular physician outside the elderly activity space<sup>77</sup> had a negative effect on physician service use. Schellhorn et al. (2000) found that with a longitudinal survey cohort effects on service use could be identified, and generally, people from earlier birth cohorts tended to go to physicians less often, everything else being equal.

### **Hospital services**

Hospital utilization measured as ever hospitalized in the previous year and number of hospital days were used as dependent variables in all studies (Table A1.2). Greater prominence of need variables in determining hospital services use can be observed; however, less explanatory power of these variables overall is also observed. Self-perceived health, level of ADL/IADL, and limitation of physical activity are common determinants of hospitalization and hospital days in most studies. Blazer et al (1995) found that those evaluated and perceived as having poor health had 2.02 and 1.62 times more experience of hospitalization and those covered by Medicaid also had 1.51 times more experience than those uncovered. Wan (1982) found that the net effect of health status indicators, illness episodes and level of chronic disability was prominent in determining hospital service use, followed by having a regular source of care; however, a differential response to illness in the utilization of inpatient services between black and white elderly was observed. Level of

---

<sup>77</sup> Activity space refers to the subset of all locations within which an individual has direct contact as a result of his/her day to day activities.



chronic disability was most strongly a predictor among black elderly while number of illness episodes was prominent among white elderly. Hospitalization was predominantly associated with a poorer perceived state of health and with suffering some form of limitation in daily mobility-related activities in the Spanish study (Fernandez-Mayoralas et al., 2000). The modesty of the results predicting hospital service use may be because the decision to be hospitalized is made mainly by the physician not the patient, and almost all variables included in the Behaviour model are demand side factors.

### **Other health services**

Unlike physician and hospital services, dental services and preventive services are mainly determined by predisposing and enabling factors and need factors play a limited role. In the study conducted by Branch et al. (1981), those who had higher incomes, those who achieved a higher level of education, and those who were employed, were significantly more likely to report a recent dental visit. Evashwick et al. (1984) confirmed that the predisposing and enabling variables accounted for more of the variability than the need variables in their study. In the Spanish study (Fernandez-Mayoralas et al., 2000), the main variables classifying use of dental care were having a higher level of education, living in an urban environment, not living alone, being a woman, being active and not suffering any personal care limitation. Wolinsky et al. (1983) also found that enabling factors such as having a regular physician or dentist were the main determinants of preventive medical and dental contact.

For home health care, factors determining use of services were spread over all three groups of variables but need factors contributed a greater portion in explanation. Branch et al. (1981) found that dependence in performing daily activities had substantial effects on home care utilization while income and having a regular physician played quite a limited role. Need factors, perceived need and level of impairment, contributed to nearly all the explanation in Coulton's study, while two predisposing factors made a modest contribution, age and social isolation (Coulton 1982). Similarly, Evashwick et al. (1984) found that need factors, perceived health and limiting physical activities, contributed to most of the explanation of home care services use. Bowling (1991) found that utilization of health care and social services was higher in the urban area and it increased with age. The multivariate

analysis from the latter study showed that household size was a strong predictor of use of home help and meals on wheel services; functional status was the best predictor of use of district nursing services.

In summary, results from the review reveal that predisposing, enabling and need factors have a differential ability to explain different types of service use among the elderly. Need factors are prominent in explaining more serious conditions, such as hospital service use; however, physician's judgment and incentives might be more influential in determining hospital admission and hospital days. Dental services are considered as more discretionary and would more likely be explained by social structure, beliefs, and enabling factors. For physician services, need factors are again prominent, but predisposing and enabling factors also play some role since the conditions stimulating care seeking would generally be viewed as less serious and demanding than those resulting in inpatient care, but more serious than those leading to dental care (Andersen, 1995).

### **A1.3 The nonusers and unmet need**

Why did some older people never use health services? Were they healthier than those who used services? And were there any implications for their health? The following sections will briefly review issues related to nonusers and unmet need.

Shapiro and Roos (1985) explored characteristics of elderly nonusers of health care services and their health outcomes by merging a province-wide survey database in 1971 with claims data documenting their health care utilization during a 9-year period (1970-1978). In their study, 13% were classified as nonusers (no visit within 2 years), 18% were low users (one to three visits), and 69% were frequent users (four or more visits). Results suggest that elderly nonusers were more likely than low users to be *single, to have some degree of mental impairment, and to have low educational attainment*. Comparing outcomes over the next 7 years, no differences were found in the subsequent hospitalization rate between nonusers and low users, but nonusers were at greater risk of a hospitalization episode of 16+ days and appeared to die sooner than low users. However, nonusers were at no greater risk of poor health outcome than frequent users. The study indicates that universally insured medical services and their apparent accessibility do not, by themselves, eliminate barriers to obtaining health services (Shapiro and Roos, 1985). Nevertheless, this study

found no positive relationship between income and either nonuse of health care or health outcome. The authors argued that an income effect might decrease with age because not as many poor people as others may survive long enough to be old, and the income spread among the elderly may narrow as government transfer payments may increase and advancing age may decrease income differentials. The study also indicates that nonuse of ambulatory care by the elderly over the 2-year period might be associated with experiencing more frequent subsequent episodes of serious illness and with dying sooner. However, increased frequency of physician contacts did not increase the likelihood of surviving longer or of delaying illness serious enough to require a lengthy stay in hospital. The low users are perhaps the most likely to be making contact specifically for general check-ups; they may be the most favored recipients of preventive activities. The authors also suggested that it might be useful and cost effective for those elderly who did not visit a physician for an extended period to be encouraged to have a general check-up once every 2 years.

Need in health care is generally defined as the capacity to benefit (McNamee et al., 1998). The need for health care can exist even if a person does not perceive his/her need; however, in this case, there is no demand for or use of health services. Once people realize the need of health care and demand services, and services are available, then utilization of service occurs. Therefore, in terms of service utilization, perceived need and demand for care are more essential. Branch and Newman (1985) conducted a longitudinal study on health and social needs of noninstitutionalized elderly in 1974, and reinterviewed them in 1980 intending to examine the extent and specific reasons why they did not access physician services when they thought they should, in addition to their characteristics and impact on the physician-utilization rate. Results revealed that among people over age 70 in the United States in 1980, 17% reported instances of not seeing a physician during the previous year when they thought they should for any reason, 12% specifically because they thought the problem was due to their age, 3% each for concern about cost, transportation difficulties, and appointment unavailable. *The elderly with lower income, lower morale, and diminished health status were more likely to report instances of not seeing the physician for reasons of perceived transportation problems, cost difficulties, or because they thought the problem was due to their age.* Those with higher income, without private insurance, living alone,

male, and with lower morale were more likely to report instances of non-contact because of appointment difficulties. The elderly who attributed problems to their age were likely to be out of annual contact with a physician, as were those with less formal education, fewer functional problems, and higher morale. The elderly reporting appointment difficulties in fact had increased reported frequencies of physician visits, as did those closer to age 70 than age 90, those with worse perceived health, and with more functional problems.

In summary, evidence from the above studies reveals that the nonusers of health care services are not healthier than the low users; they tend to have poorer personal attributes such as lower education and mental impairment. In the context of a limited package of health insurance such as Medicare, differences in level of unmet need according to cost difficulties across income levels indicate that financial barriers for the poor elderly still exist.

#### **A1.4 Methodological issues**

The following methodological issues are raised from this review.

Most studies used available secondary databases; therefore, only available variables can be included in the analysis. Part of the modest explanatory power of the model may be due to this limitation. Those variables that might be more significant in determining decisions for using or not using the service, such as perception and attitudes to health problems or aging, past experience and quality of service perceived, are rarely included in the analysis. Therefore, a more comprehensive list of variables influencing care-seeking behaviour for specific services should be included.

One problem raised by various authors is the weakness of a cross-sectional survey in explaining the causal effect of these factors on service use; they call for a longitudinal survey since the relationship between service utilization and morbidity or health status can be in both directions in a cross-sectional survey. However, time and resource costs, period of follow up, and changes of external and organizational environments during the follow-up period of study, have to be considered in a longitudinal study. Some weaknesses of a cross-sectional survey might be corrected by better design of the questionnaire, such as sequence and questions being asked, in addition to use of complementary qualitative methods.

Measurement of service use is also crucial and a more specific service measure might increase the level of prediction of the model. Instead of measuring general physician use, a more specific purpose of use could be scrutinized, such as visit for physical check-up, visit for preventive care, use for chronic conditions or acute care, use of GP or specialist or type of provider etc.

The reliability and accuracy of self-reported illness and service use is also questioned, especially among the oldest old. Service utilization is human behaviour based on an individual's decision to use or not to use services, which is determined by recognition of the problems (Padgett and Brodsky, 1992). Therefore, self-perceived illness and health are appropriate to be used as need variables and most studies revealed that self-perceived health and illness are prominent in determining physician and hospital service use. For self-reported service utilization, most studies used a 12-month recall of service use for all types of service, except the studies of Thailand and Spain which employed a 2-week recall period for physician use. Various studies reported greater inaccuracies in self-reported use among those respondents with greater age, greater volume of services used, greater disability, less social support, less education, and lower income (Wallihan et al., 1999). This might be another reason supporting a longitudinal study; however, an appropriate recall period, such as 2 weeks or one month, may reduce this bias (Mentnech et al., 1995). Better design of questionnaires, for instance, providing details of presenting conditions and action taken by respondents for each problem, may reduce under-reporting of illness and service use. Furthermore, use of proxy respondents in the case of the oldest old and demented elderly might improve the accuracy of self-reported illness and services used.

In addition, differences in various aspects between the oldest old and the young old are predictable, such as attitudes toward natural death and disease in old age, level of disability and dependency, and service utilization, etc. Therefore, it might be wise to separate the study of health service utilization between the youngest and the oldest elderly.

In general, a fairly small explanatory power of the Behavioural model in predicting service use may be due to the emphasis on population characteristics in determining service use. Evidence reveals that a number of supply side factors, such as provider incentives, number of physicians, hospital beds, and high technology per population, also determine service

use. However, considering access to care of the population, factors determining an individual's decision in using or not using health services are crucial for policy makers and health administrators in improving the access to care of particular groups of people, especially the poor and vulnerable groups.

Table A1. 1 Determinants of physician utilization

MESUREMENT OF SERVICE USE	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, Race	Occupation	Living arrangements	Rural-urban / SMSA *	Perceptions/ attitudes	Having regular physician	Insurance covered	Income	Housing/ possessions	Transportation problems	Social networks	Illness / Health problem	Chronic conditions	Bed confinement	Number of medicines taken	ADL, IADL	Physical/ functional limitation	Psychosomatic / mental symptoms	Emotional health	Perceived health	Quality of life	Risks or preventive behaviour	Nutritional risk	R2	ANALYTICAL METHODS
VISITS	(Branch et al., 1981)	Area probability sample of 65+ in Massachusetts (1,625)										✓						✓				✓	✓			✓				27.0	Regression
VISITS	(Coulton and Frost, 1982)	Cluster sample of 1,834 non-institutionalized person in Cleveland Ohio.															✓	✓					✓							12.0	Regression
VISITS	(Wan, 1982)	Multistage probability sample from 5 low income communities (1,987 aged 65+)										✓	✓	✓				✓					✓							15.3	Multiple classification analysis
USE	(Stoller, 1982)	Probability sample of 753 non-institutionalized elderly in New York		✓		✓					✓	✓						✓	✓	✓										13.0	Regression
VISITS			✓							✓	✓					✓														22.3	
VISITS	(Wolinsky et al., 1983)	Two stage random sample of 401 elderly living in 18 census tracts, St. Louis SMSA										✓														✓			✓	23.0	Regression
ER VISITS				✓							✓																		✓	12.0	
VISITS	(Evashwick et al., 1984)	Sample from the MA Health Care Panel Study (1,317)										✓	✓									✓	✓			✓		✓		23.6	Regression
Visits	(Arling, 1985)	Multistage area sample of 2,146 (60+) in Virginia	✓			✓								✓			✓	✓						✓	✓					17.9	Regression
VISITS	(Miller, 1992)	Sub-group of the 1984				✓	✓			✓			✓	✓					✓	✓		✓	✓			✓				19.0	Logistic

MESUREMENT OF SERVICE USE	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, Race	Occupation	Living arrangements	Rural-urban / SMSA*	Perceptions/ attitudes	Having regular physician	Insurance covered	Income	Housing/ possessions	Transportation problems	Social networks	Illness / Health problem	Chronic conditions	Bed confinement	Number of medicines taken	ADL, IADL	Physical/ functional limitation	Psychosomatic / mental symptoms	Emotional health	Perceived health	Quality of life	Risks or preventive behaviour	Nutritional risk	R2	ANALYTICAL METHODS	
USE		National Health Interview Survey, 3,542 elderly aged 65+ with some limitation in their activity.					✓						✓	✓					✓	✓			✓			✓				31.6	regression and OLS	
USE	(Blazer et al., 1995)	Stratified random sample of 4,162 elderly residents of one urban and four rural counties of North Carolina		✓									✓						✓							✓						Logistic Regression
VISITS							✓												✓						✓						Regression	
USE	(Jitapunkul et al., 1999)	A cross-sectional multistage random sampling household survey of 4,480 Thai elderly.				✓				✓				✓	✓				✓							✓		✓				Univariate and multivariate
USE	(Fernandex-Mayoralas et al., 2000)	Sub-sample of the 1993 Spanish National Health Survey, 3,154 non-institutionalized elderly aged 65+																		✓	✓	✓	✓			✓					67%	Bivariate and Discriminant analysis
ER USE			✓	✓						✓												✓	✓		✓						71%	
VISITS	(Schellhorn et al., 2000)	A random sampling of a health insurance list of community residing elderly aged 75 years and older		✓										✓				✓			✓					✓	✓					Negative binomial model (Negbin)
Primary care visits														✓				✓			✓					✓						



MESUREMENT OF SERVICE USE	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, Race	Occupation	Living arrangements	Rural-urban / SMSA*	Perceptions/ attitudes	Having regular physician	Insurance covered	Income	Housing/ possessions	Transportation problems	Social networks	Illness / Health problem	Chronic conditions	Bed confinement	Number of medicines taken	ADL, IADL	Physical/ functional limitation	Psychosomatic / mental symptoms	Emotional health	Perceived health	Quality of life	Risks or preventive behaviour	Nutritional risk	R2	ANALYTICAL METHODS
Specialist visits		living in Bern, They were sampled to study the impact of preventive home visits to elderly residents, 249 in intervention group and 497 in control group followed up for 3 years.	✓			✓															✓	✓	✓		✓						
VISITS	(Nemet and Bailey, 2000)	A mail survey of random sampling of community residing elderly aged 65 and over living in rural area, Orleans County, Vermont. Of the total 750 questionnaires mailed, 55% were replied and usable.							✓			✓							✓												Ordered probit model
Use ER use	(Walter-Ginzburg et al., 2001)	A random stratified sample of subjects age 75-94 living in community in Israel. The sample consisted of 1,487 Jews stratified by age, sex, and place of birth.							✓										✓	✓			✓		✓						Stepwise Multiple Logistic Regression

☐ = variables included in the study   
 ✓ = significant variable in explaining services use   
 \*SMSA = Standard Metropolitan Statistical Area

**Table A1. 2 Determinants of hospitalization and hospital days**

Type of care	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, race	Occupation	Job satisfaction	Housing/ possessions	Living arrangements	Rural-urban / SMSA	Perceptions/ attitudes	Having a regular physician	Insurance covered	Income	Opportunity costs	Transportation problems	Social networks	Illness / health problems	Chronic conditions	Number of medicines taken	Physical/ functional limitation	ADL, IADL	Bed confinement	Perceived health	Smoking/ alcohol drinking	Depression	Nutritional risk	R2	ANALYTICAL METHODS	
Hospital days	(Branch et al., 1981)	Area probability sample of 65+ in Massachusetts (1625)	✓																	✓			✓	✓		✓				15.2	Regression	
Hospital days	(Wan, 1982)	Multistage probability sample from 5 low income communities (1987 aged 65+)												✓						✓			✓							8.1	Multiple classification analysis	
Hospitalization	(Wolinsky et al., 1983)	Two stage random sample of 401 elderly living in 18 census tracts, St. Louis SMSA																						✓				✓	13.0	Regression		
Hospitalization	(Evashwick et al., 1984)	Sample from the MA Health Care Panel Study (1317)											✓					✓					✓	✓		✓				6.2	Regression	
Hospitalization	(Blazer et al., 1995)	Stratified random sample of 4162 elderly residents of one urban and four rural counties of North Carolina			✓		✓							✓							✓					✓						Logistic Regression
DAYS																					✓				✓							Ordinary Least Square
Hospitalization	(Fernandez-Mayoralas et al., 2000)	Sub-sample of the 1993 Spanish National Health Survey, 3154 non-institutionalized elderly aged 65+		✓		✓						✓												✓	✓	✓	✓			71	Bivariate and Discriminant analysis	

Type of care	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, race	Occupation	Job satisfaction	Housing/ possessions	Living arrangements	Rural-urban / SMSA	Perceptions/ attitudes	Having a regular physician	Insurance covered	Income	Opportunity costs	Transportation problems	Social networks	Illness / health problems	Chronic conditions	Number of medicines taken	Physical/ functional limitation	ADL, IADL	Bed confinement	Perceived health	Smoking/ alcohol drinking	Depression	Nutritional risk	R2	ANALYTICAL METHODS	
Hospitalization	(Walter-Ginzburg et al., 2001)	A random stratified sample of subjects age 75-94 living in community in Israel. The sample consisted of 1,487 Jews stratified by age, sex, and place of birth.																				✓	✓	✓		✓						Stepwise Multiple Logistic Regression

☐ = variables included in the study

√ = significant variable in explaining services use

\*SMSA = Standard Metropolitan Statistical Area



**Table A1. 3 Determinants of use of dental service, home help care, and preventive services**

Type of care	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, race	Occupation	Job satisfaction	Housing/ possessions	Living arrangements	Rural-urban / SMSA	Perceptions/ attitudes	Having a regular physician	Insurance covered	Income	Opportunity costs	Transportation problems	Social networks	Illness/ health problems	Chronic conditions	Number of medicines taken	Physical /functional limitation	ADL, IADL	Psychological health	Bed confinement	Perceived health	Smoking/ alcohol drinking	Nutritional risk	R2	ANALYSIS METHODS
Dental visits	(Branch et al., 1981)	Area probability sample of 65+ in Massachusetts (1625)				✓		✓								✓														14.5	Regression
Dental Use	(Evashwick et al., 1984)	Sample from the MA Health Care Panel Study (1317)	✓			✓		✓					✓			✓											✓			13.5	Regression
Dental Use	(Fernandez-Mayoralas et al., 2000)	Sub-sample of the 1993 Spanish National Health Survey, 3154 non-institutionalized elderly aged 65+		✓		✓		✓	✓	✓	✓												✓							52.3	Bivariate and Discriminant analysis
Home care	(Branch et al., 1981)	Area probability sample of 65+ in Massachusetts (1625)												✓		✓							✓							23.3	Regression
Personal care service	(Coulton and Frost, 1982)	Cluster sample of 1834 non-institutionalized person in Cleveland Ohio.	✓							✓										✓		✓								43.0	Regression
Preventive service	(Wolinsky et al., 1983)	Two stage random sample of 401 elderly living in 18 census tracts, St. Louis SMSA												✓								✓								19.0	Regression
Home care	(Evashwick et al., 1984)	Sample from the MA Health Care Panel Study (1317)	✓		✓		✓								✓	✓							✓			✓				13.5	Regression

Type of care	AUTHORS	METHOD/ SAMPLE	Age	Sex	Marital status	Education	Ethnicity, race	Occupation	Job satisfaction	Housing/ possessions	Living arrangements	Rural-urban / SMSA	Perceptions/ attitudes	Having a regular physician	Insurance covered	Income	Opportunity costs	Transportation problems	Social networks	Illness/ health problems	Chronic conditions	Number of medicines taken	Physical /functional limitation	ADL, IADL	Psychological health	Bed confinement	Perceived health	Smoking/ alcohol drinking	Nutritional risk	R2	ANALYSIS METHODS	
nursing	(Bowling et al., 1991)	Three samples of elderly living in City and Hackney (inner London) , and Braintree (Essex)	✓	✓																				✓							Logistic regression	
Home care			✓									✓													✓							
Meals on wheels			✓	✓																						✓						

☐ = variables included in the study    ✓ = significant variable in explaining services use    \*SMSA = Standard Metropolitan Statistical Area

## References

- Andersen, R. (1995) Revisiting the Behavioral Model and Access to Medical Care: Does It Matter? *Journal of Health and Social Behavior*, **36**, 1-10.
- Andersen, R. and Newman, J. (1973) Societal and individual determinants of medical care utilization in the United States. *Milbank Memorial Fund Quarterly*, **51**, 95-124.
- Arling, G. (1985) Interaction Effects in a Multivariate Model of Physician Visits by Older People. *Medical Care*, **23**, 361-371.
- Becker, M., Haefner, D., Kash, S., Kirscht, J., et al. (1977) Selected psychological models and correlates of individual health-related behaviors. *Medical Care*, **15**, 27-46.
- Blazer, D. G., Landerman, L. R., Fillenbaum, G. and Horner, R. (1995) Health services access and use among older adults in North Carolina: urban vs rural residents. *Am J Public Health*, **85**, 1384-90.
- Bowling, A., Farquhar, M. and Browne, P. (1991) Use of services in old age: data from three surveys of elderly people. *Social Science & Medicine*, **33**, 689-700.
- Branch, L., Jette, A., Evashwick, C., Polansky, M., Rowe, G., et al. (1981) Toward understanding elders' health service utilization. *Journal of community Health*, **7**, 80 - 92.
- Coulton, C. and Frost, A. K. (1982) Use of Social and Health Services by the Elderly. *Journal of Health and Social Behavior*, **23**, 330-339.
- Diehr, P., Martin, D. and Price, K. (1984) Use of ambulatory care services in three provider plans: interaction between patient characteristics and plans. *American Journal of Public Health*, **74**, 47.
- Evashwick, C., Rowe, G., Diehr, P. and Branch, L. (1984) Factors Explaining the Use of Health Care Services by the Elderly. *Health Service Research*, **19**, 357-382.

- Fernandez-Mayoralas, G., Rodriguez, V. and Rojo, F. (2000) Health services accessibility among Spanish elderly. *Social Science and Medicine*, 50, 17-26.
- Hulka, B. and Wheat, J. (1985) Patterns of Utilization: The Patient Perspective. *Medical Care*, 23, 438 - 460.
- Jitapunkul, S., Songkhla, M. N., Chayovan, N., Chirawatkul, A., et al. (1999) A national survey of health-service use in Thai elders. *Age and Ageing*, 28, 67-71.
- McNamee, P., Gregson, B. A., Wright, K., Buck, D., et al. (1998) Estimation of a multiproduct cost function for physically frail older people. *Health Econ*, 7, 701-10.
- Mentnech, R., Ross, W., Park, Y. and Benner, S. (1995) An analysis of utilization and access from the NHIS: 1984-92. 17, 51-9.
- Miller, R. H. (1992) Access to ambulatory care among noninstitutionalized, activity-limited persons 65 and over. 34, 1237-47.
- Nemet, G. F. and Bailey, A. J. (2000) Distance and health care utilization among the rural elderly. *Social Science and Medicine*, 50, 1197-1208.
- Padgett, D. K. and Brodsky, B. (1992) Psychosocial factors influencing non-urgent use of the emergency room: a review of the literature and recommendations for research and improved service delivery. *Social Science and Medicine*, 35, 1189-1197.
- Rosenstock, I. (1966) Why people use health services. *Milbank Memorial Fund Quarterly*, 44, 128 - 62.
- Rossiter, L. and Wilensky, G. (1983) A reexamination of the use of physician services: the role of physician-initiated demand. *Inquiry*, 20, 162-72.
- Schellhorn, M., Stuck, A. E., Minder, C. E. and Beck, J. C. (2000) Health Services Utilization of Elderly Swiss: Evidence from Panel Data. *Health Economics*, 9, 533-545.
- Shapiro, E. and Roos, N. (1985) Elderly Nonuser of Health Care Services: Their Characteristics and Their Health Outcome. *Medical Care*, 23, 247 - 257.

- Stoller, E. P. (1982) Patterns of Physician Utilization by the Elderly: A Multivariate Analysis. *Medical Care*, XX, 1080-1089.
- Wallihan, D. B., Stump, T. E. and Callahan, C. M. (1999) Accuracy of Self-Reported Health Services Use and Patterns of Care Among Urban Older Adults. *Medical Care*, 37, 662-670.
- Walter-Ginzburg, A., Chetrit, A., Medina, C., Blumstein, T., et al. (2001) Physician visits, emergency room utilization, and overnight hospitalization in the old-old in Israel: The cross-sectional and longitudinal aging study (CALAS). *Journal of the American Geriatrics Society*, 49, 549-556.
- Wan, T. and Broida, J. (1985) Socio-medical determinants of hospital utilization in Quebec, Canada, 1970-1975. *International Journal of Health Services*, 16, 43-55.
- Wan, T. T. H. (1982) Use of Health Services by the Elderly in Low Income Community. *Milbank Memorial Fund Quarterly/Health and Society*, 60, 82 - 107.
- Wennberg, J., Barnes, B. and Zubkoff, M. (1982) Professional uncertainty and the problem of supplier-induced demand. *Social Science and Medicine*, 16, 811-24.
- Wolinsky, F. D., Miller, D. K., Prendergast, J. M., Creel, M. J., et al. (1983) Health Service Utilization among the Noninstitutionalized Elderly. *Journal of Health and Social Behavior*, 24, 325-337.



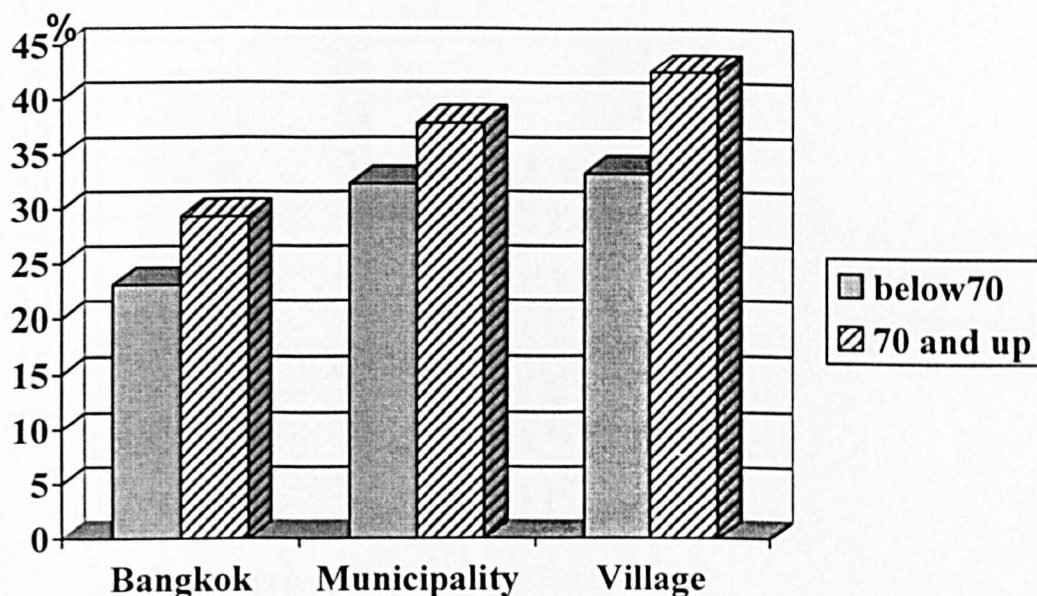
## APPENDIX 2: ILLNESS AND SERVICE UTILIZATION AMONGST THAI ELDERLY PRIOR TO THE UC SCHEME

**Table A2. 1 Percentage of elderly aged 70 and above by demographic and socioeconomic conditions in 1991, 1996, and 2001**

	1991	1996	2001
<b>Area</b>			
Bangkok	39	35	41
Municipality area	40	38	41
Sanitary district	41	40	41
Village	41	38	41
<b>Sex*</b>			
Male	37	36	40
Female	43	40	43
<b>Marital status*</b>			
Married	30	29	32
Unmarried	56	53	56
<b>Education*</b>			
None or <primary	62	53	57
Primary	26	28	34
Secondary	26	42	35
<b>Insurance coverage*</b>			
Uninsured	41	33	34
CSMBS	35	38	43
MWS	41	45	46
HC	43	27	19
<b>Per capita household monthly income (Baht)</b>			
<500			41
500 – 1000	N/A	N/A	42
1000-2000			36
2000-3000			38
>3000			39

\* significant at  $P < 0.05$

**Figure A2. 1 Percentage of elderly aged 60 and above reported illness during the 2-week recall period by area of residence and age group, 2001**



**Figure A2. 2 Percentage of elderly aged 60 and above reported illness during the 2-week recall period by sex and age group, 2001**

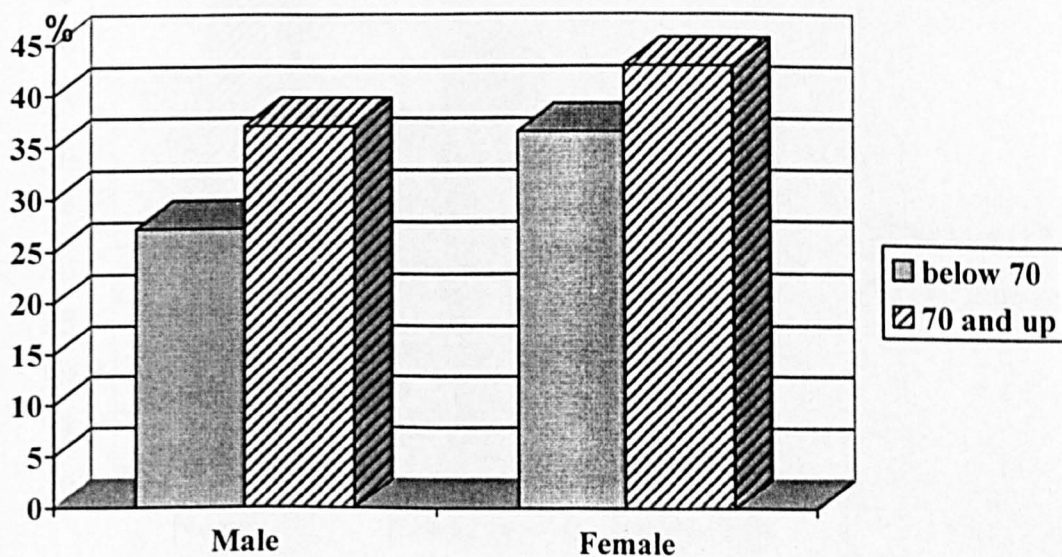


Figure A2. 3 Percentage of elderly aged 60 and above reported illness during the 2-week recall period by marital status and age group, 2001

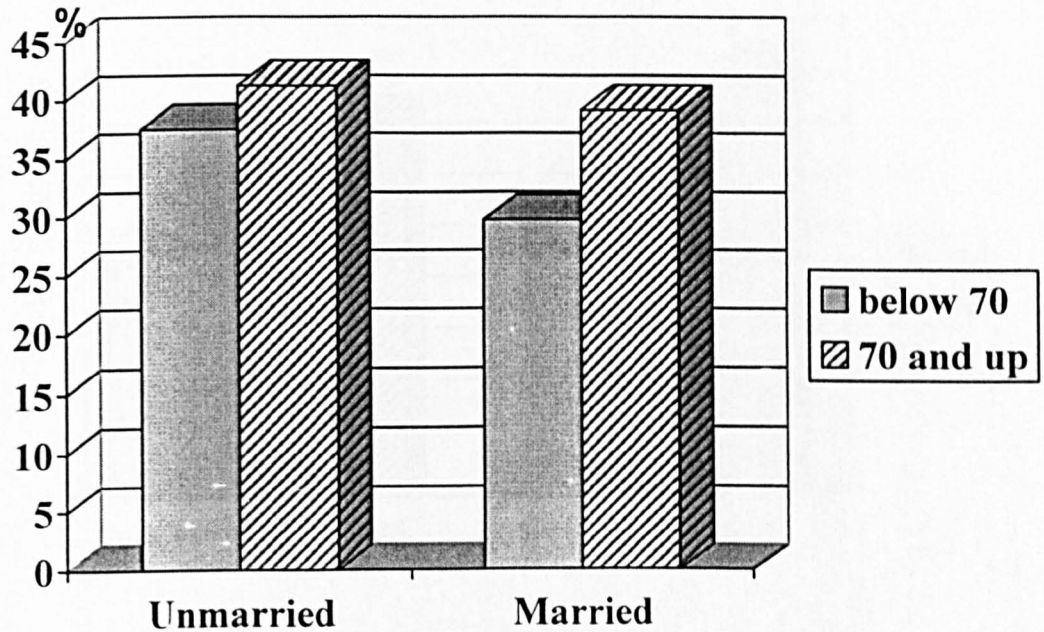
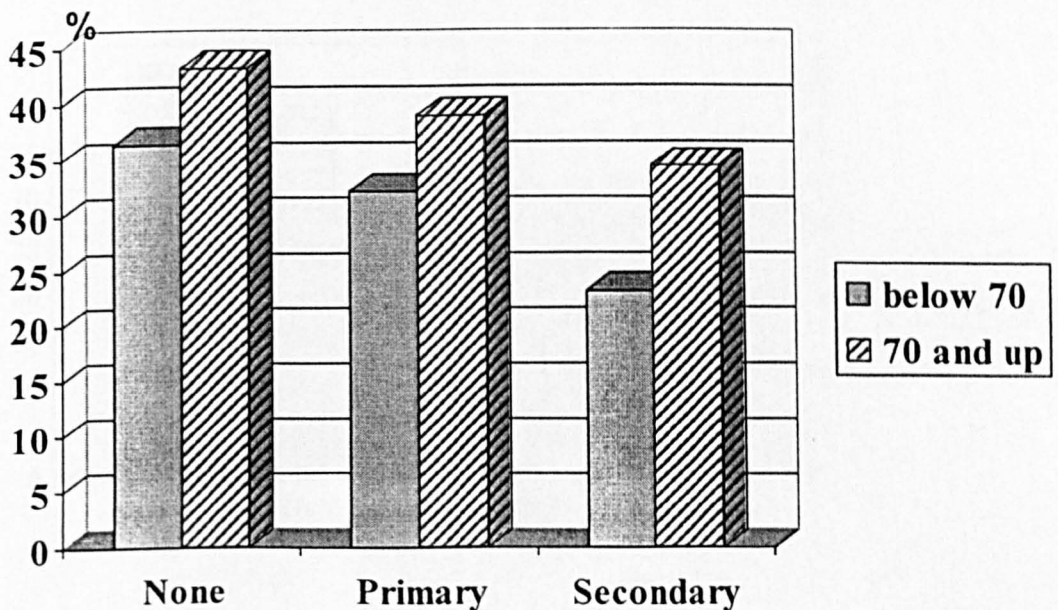
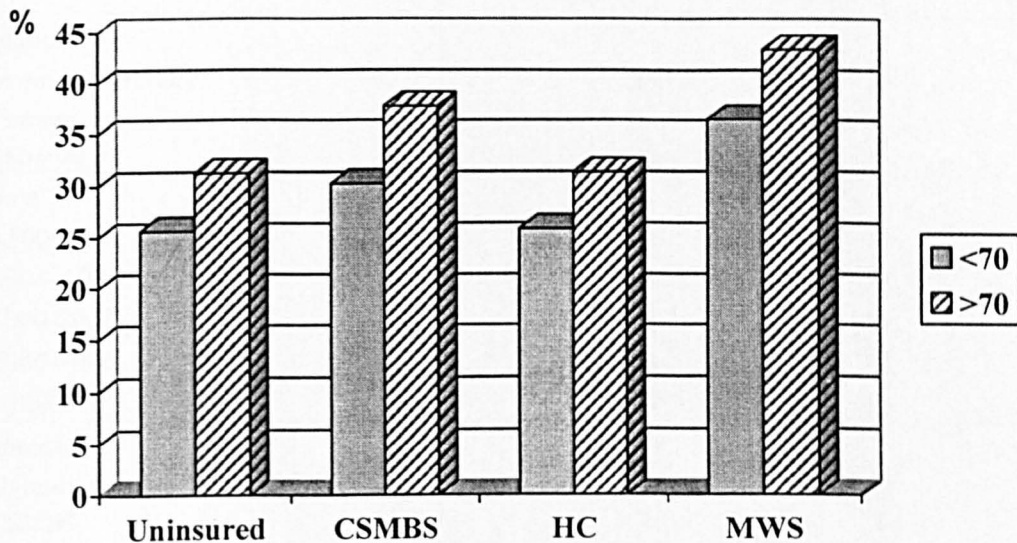


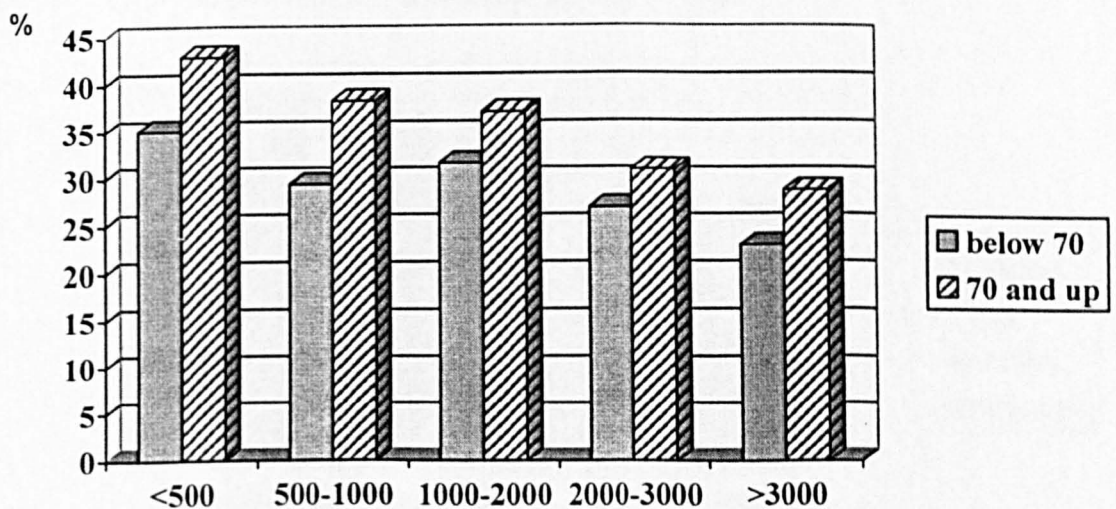
Figure A2. 4 Percentage of elderly aged 60 and above reported illness during the 2-week recall period by educational level and age group, 2001



**Figure A2. 5 Percentage of elderly aged 60 and above reported illness during the 2-week recall period by insurance coverage and age group, 2001**



**Figure A2. 6 Percentage of elderly aged 60 and above reported illness during the 2-week recall period by per capita monthly household income and age groups, 2001**

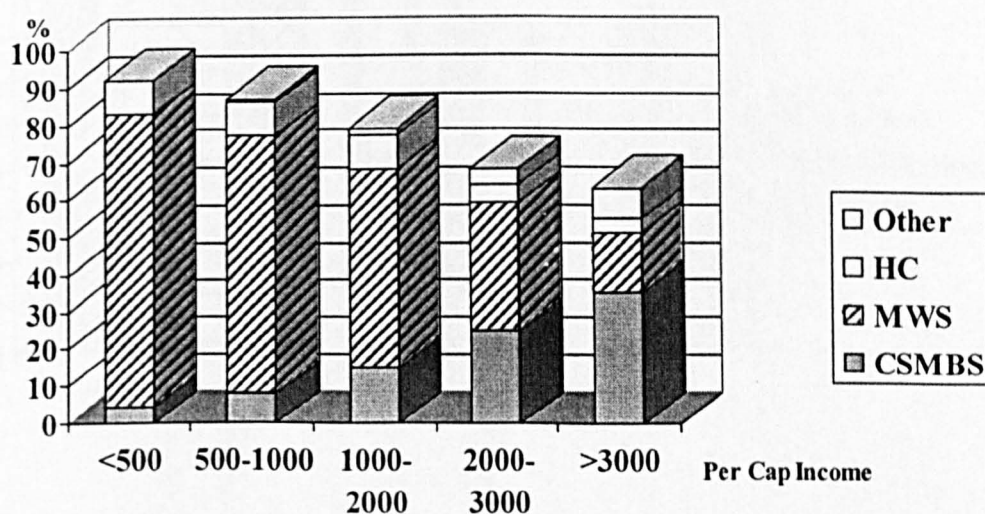




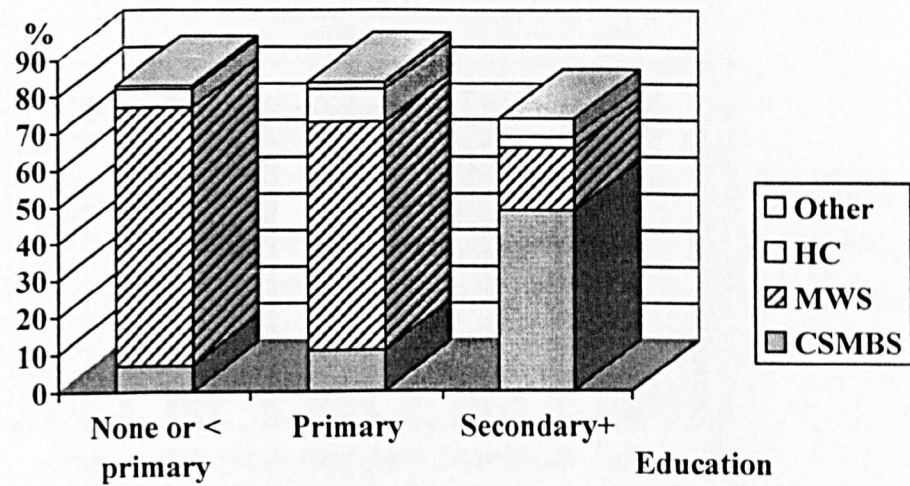
**Table A2. 2 Distribution of socioeconomic status and insurance coverage among the elderly aged 60 and above by area of residence, 2001**

	Bangkok	Municipality	Village
<b>Education</b>			
None or <primary	25	27	31
Primary	39	58	65
Secondary	36	15	4
<b>Income</b>			
<500	1	11	29
500 – 1000	6	19	24
1000-2000	26	29	22
2000-3000	20	12	05
>3000	33	10	03
<b>Insurance</b>			
Uninsured	61	20	10
CSMBS	26	23	9
MWS	7	47	72
HC	0	6	9

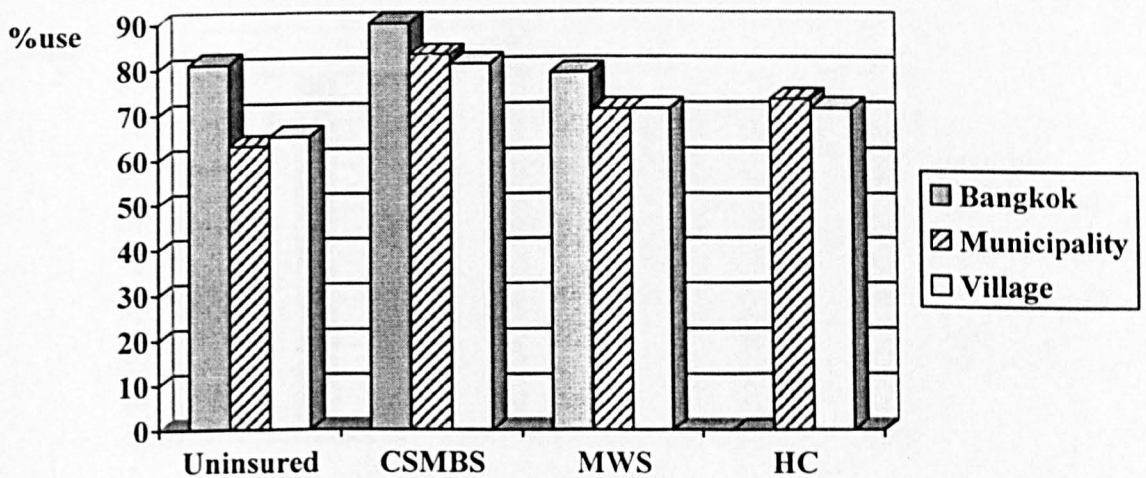
**Figure A2. 7 Percentage of insurance coverage among the elderly aged 60 and above by per capita monthly household income in 2001**



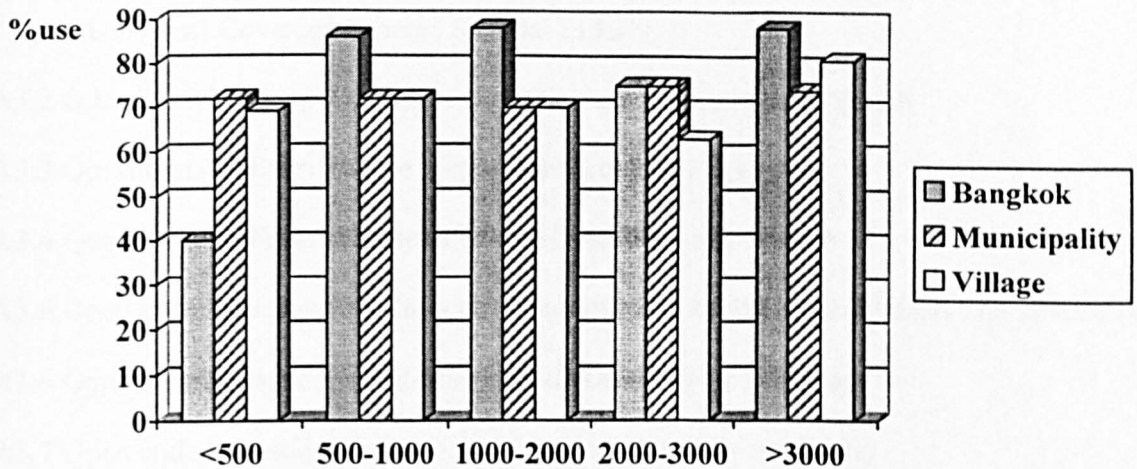
**Figure A2. 8 Insurance coverage among the elderly aged 60 and above by educational level, 2001**



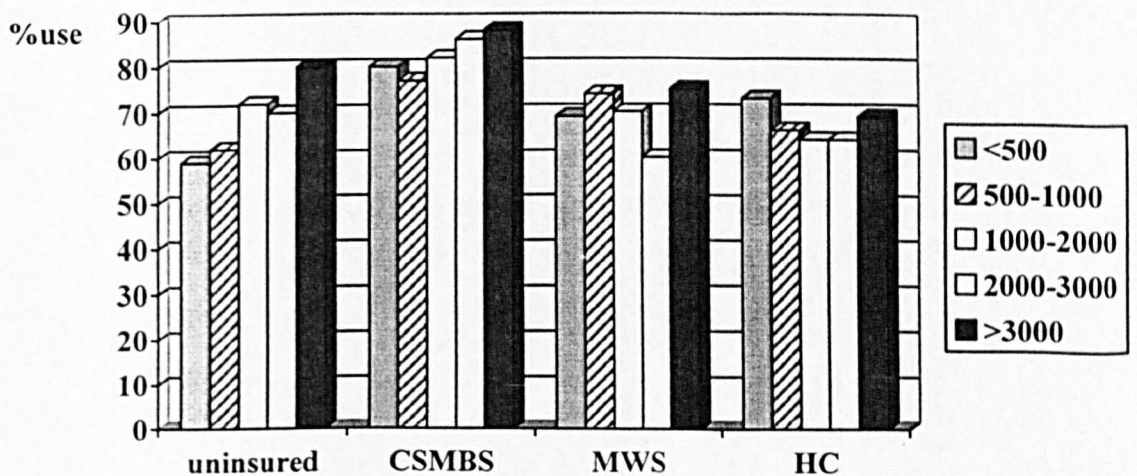
**Figure A2. 9 Probabilities of use health facilities (%) among the elderly aged 60 and above by insurance coverage and residential area, 2001**



**Figure A2. 10 Probabilities of use health facilities (%) among the elderly aged 60 and above by per capita household monthly income and residential area, 2001**



**Figure A2. 11 Probabilities of use health facilities (%) among the elderly aged 60 and above by insurance coverage and per capita household income, 2001**



### **Appendix 3: Research tools**

- A3.1 Questionnaire Form 1: A survey of Access to Care and Financial Protection of the Universal Coverage Scheme for Thai Elderly
- A3.2 Questionnaire Form 2: Illness and service use in the previous month
- A3.3 Questionnaire Form 3: Care pattern for chronic conditions
- A3.4 Questionnaire Form 4: Hospitalization in the previous year
- A3.5 Open ended questions for In-depth interview with health administrators and managers
- A3.6 Open ended questions for focus group discussion with providers
- A3.7 Open ended questions for focus group discussion with the elderly
- A3.8 Open ended questions for in-depth interview with individuals with catastrophic expenditures



**A3.1 Questionnaire Form 1: A survey of the Universal Coverage Scheme for Thai Elderly**

**Information for respondents**

This survey aims to assess how well the Universal Coverage Policy (UC) enabled access to care and financial protection for the elderly. The survey focuses on coverage of the UC scheme, service utilization, take up of UC benefit in getting care, and burden of costs in obtaining care.

Your participation is completely voluntary. The researcher would like to ensure that your personal information will be kept confidentially and will be used only in term of aggregated information. Your corporation in providing reliable information is very helpful and crucial for the study in order to inform policy makers and health administrators for further improvement of the policy and its implementation.

This questionnaire is divided into 8 sections as follows:

- Section 1 Personal information and health benefit
- Section 2 Morbidity
- Section 3 Disability and activities of daily life
- Section 4 Psychosocial and self-assessed health
- Section 5 Utilization of preventive and promotive services
- Section 6 Experiences of catastrophic payment and unmet need
- Section 7 Attitudes toward the UC scheme
- Section 8 Socioeconomic status and living arrangements

Interviewer.....

Interv [ ][ ]

Date ...../...../.....

Supervised and coded by.....

Sup [ ]

Entry #1 .....#2.....

Key [ ]



	<u>For Coder</u>
10. <u>For those who are covered by benefit 2-6 in Q9 and also hold the UC card,</u> how do you value the UC card?	A17 [ ]
<input type="checkbox"/> 1. Useful and had been used <input type="checkbox"/> 2. Useful and will be used <input type="checkbox"/> 3. Useful but will not be used <input type="checkbox"/> 4. Useless and will not be used	A18 [ ]
Please provide reason .....	
.....	
<div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">➡</div> <div> <p><b>End of interview for following respondents:</b></p> <ul style="list-style-type: none"> <li>• Staying in this community less than 6 months</li> <li>• Covered by other insurance scheme and do not hold the UC card</li> <li>• Covered by other insurance scheme and also hold the UC but intend not to use it.</li> </ul> </div> </div> </div>	
11. Please name the hospital specified in your UC card.....	A19 [ ]
<input type="checkbox"/> 1. District hospital <input type="checkbox"/> 2. Provincial hospital <input type="checkbox"/> 3. Private hospital <input type="checkbox"/> 4. Other hospital outside the province	
Is it convenient in access to get care at your registered hospital?	A20 [ ]
<input type="checkbox"/> 1. Yes, it is because.....	A21 [ ]
<input type="checkbox"/> 2. No, it isn't because.....	
<div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">➡</div> <div>Go to section 2 for respondent who hold the UC card</div> </div> </div>	
12. <u>Only for the uninsured:</u> Do you know the UC scheme?	A22 [ ]
<input type="checkbox"/> 1. Yes, I know	
<input type="checkbox"/> 2. No, I don't know	A23 [ ]
Why don't you have the UC card?	
<input type="checkbox"/> 1. No ID card	
<input type="checkbox"/> 2. No civil registration in this province	
<input type="checkbox"/> 3. Don't want	
<input type="checkbox"/> 4. Don't know the reason	
<input type="checkbox"/> 5. Other.....	

Section 2 Morbidity

2.1 Health problem within one month prior to the survey

13. Did you get illness or care during previous month?

- ☐ 1. Yes, I got..... episodes  
Specify your health problem: episode  
1.....  
2.....  
3.....

☐ 2. No, I did not

14. Did you get any injury during previous month?

- ☐ 1. Yes, I go..... episodes.  
What did cause the injury?  
Episode 1.....  
Episode 2.....  
Episode 3.....

☐ 2. No, I did not.

Code of injury

- |                         |                           |           |
|-------------------------|---------------------------|-----------|
| 01. Fall                | 02. Sharp cut             | 03. Burn  |
| 04. Poisonous animal    | 05. Road traffic accident |           |
| 06. Water/ Air accident | 07. Drowning              |           |
| 08. Electric shock      | 09. Assault               | 10. Other |

For coder

A24 [ ]  
A25 [ ]  
A26 [ ][ ]  
A27 [ ][ ]  
A28 [ ][ ]

A29 [ ]  
A30 [ ]  
A31 [ ][ ]  
A32 [ ][ ]  
A33 [ ][ ]



**For respondent with illness, injury, or getting care in previous month, please interview the details of illness and care received of each episode by using questionnaire module 2.**

**2.2 Chronic illness**

15. Do you have any following chronic conditions or other conditions requiring continuous care more than 6 months? (check ✓ in front of condition reported by respondent)

- |  |   |
|--|---|
| <input type="checkbox"/> 01 Ischemic heart disease | <input type="checkbox"/> 13 Back pain           |
| <input type="checkbox"/> 02 Other heart diseases   | <input type="checkbox"/> 14 Knee arthritis      |
| <input type="checkbox"/> 03 Hypertension           | <input type="checkbox"/> 15 Chronic headache    |
| <input type="checkbox"/> 04 Asthma/ COPD           | <input type="checkbox"/> 16 Other pain          |
| <input type="checkbox"/> 05 Other lung diseases    | <input type="checkbox"/> 17 Cataract            |
| <input type="checkbox"/> 06 Hemiplegia             | <input type="checkbox"/> 18 Other eye disease   |
| <input type="checkbox"/> 07 Muscle weakness        | <input type="checkbox"/> 19 Ear disease         |
| <input type="checkbox"/> 08 Epilepsy               | <input type="checkbox"/> 20 Dementia            |
| <input type="checkbox"/> 09 Paralysis              | <input type="checkbox"/> 21 Depression          |
| <input type="checkbox"/> 10 Liver disease problem  | <input type="checkbox"/> 22 Other Psychological |
| <input type="checkbox"/> 11 Renal disease          | <input type="checkbox"/> 23 AIDS                |
| <input type="checkbox"/> 12 Diabetes               | <input type="checkbox"/> 24 Other specify.....  |
|  | <input type="checkbox"/> 25 None                |



**For respondent with chronic condition, please interview the details of care pattern of each condition by using questionnaire module 3.**

**2.3 Hospitalization in previous year**

16. Were you ever hospitalized in previous year?

- ☐ 1. Yes, I got.....admissions
- ☐ 2. No, I was not.



**For respondent who reported hospitalization in previous year, please continue interview the details of each hospitalization episode by using questionnaire module 4.**

For coder

A34 [ ][ ]

A35 [ ][ ]

A36 [ ][ ]

A37 [ ][ ]

A38 [ ][ ]

A39 [ ]

A40 [ ][ ]

**Section 3. Disability and Activity of Daily Living**For coder

17. Do you have any of following problems? If yes, please inform how long have you suffered with it? And was it due to an accident? (none=12)

	Duration (years)	Due to accident		
		1. Yes	2. No	
<input type="checkbox"/> 01 Hemiplegia	.....	<input type="checkbox"/>	<input type="checkbox"/>	A41 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 02 Quadriplegia	.....	<input type="checkbox"/>	<input type="checkbox"/>	A42 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 03 Paraplegia	.....	<input type="checkbox"/>	<input type="checkbox"/>	A43 <input type="checkbox"/>
<input type="checkbox"/> 04 Hearing loss/ deafness	.....	<input type="checkbox"/>	<input type="checkbox"/>	A44 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 05 Dumbness	.....	<input type="checkbox"/>	<input type="checkbox"/>	A45 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 06 Blindness	.....	<input type="checkbox"/>	<input type="checkbox"/>	A46 <input type="checkbox"/>
<input type="checkbox"/> 07 Deformity of limb	.....	<input type="checkbox"/>	<input type="checkbox"/>	A47 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 08 Scoliosis	.....	<input type="checkbox"/>	<input type="checkbox"/>	A48 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 09 Mental retardation	.....	<input type="checkbox"/>	<input type="checkbox"/>	A49 <input type="checkbox"/>
<input type="checkbox"/> 10 Psychosis	.....	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> 11 Other specify.....	.....	<input type="checkbox"/>	<input type="checkbox"/>	

18. Do you use any following prosthesis?

<input type="checkbox"/> 01 Spectacles	<input type="checkbox"/> 06 Crutches	A50 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 02 Hearing aids	<input type="checkbox"/> 07 Wheelchair	A51 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 03 Denture	<input type="checkbox"/> 08 Prosthetic arm/leg	A52 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 04 Stick	<input type="checkbox"/> 09 Other specify.....	
<input type="checkbox"/> 05 Walker	<input type="checkbox"/> 10 None	

19. For respondent with chronic condition and problem in Q17, does the problem lead to difficulty or inability in performing your daily activity?

☐ 1. Yes, it does. ☐ 2. No, it does not. A53 ☐

20. Are you able to perform following daily activities?

	1.Unable	2.Able with help	3. Able	
1. Feeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A54 <input type="checkbox"/>
2. Grooming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A55 <input type="checkbox"/>
3. Toileting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A56 <input type="checkbox"/>
4. Dressing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A57 <input type="checkbox"/>
5. Moving from chair or bed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A58 <input type="checkbox"/>
6. Walking within house	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A59 <input type="checkbox"/>
7. Traveling alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A60 <input type="checkbox"/>
8. Walking up and down stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A61 <input type="checkbox"/>

**21. For respondent with difficulty in performing any of above activities, who does provide care for you?**

- ☐ 1. Children      ☐ 2. Spouse  
☐ 3. Relative      ☐ 4. Friend  
☐ 5. Paid assistant with a rate of .....Baht/month  
☐ 6. None

How do you rate the quality of care provided?

- ☐ 1. Very good      ☐ 2. Good      ☐ 3. Fair  
☐ 4. Poor      ☐ 5. Very poor

**22. How do you manage following homework activities?**

1) Cooking

- ☐ 1. Self      ☐ 2. Support from others      ☐ 3. Pay for

2) Cleaning

- ☐ 1. Self      ☐ 2. Support from others      ☐ 3. Pay for

3) Washing

- ☐ 1. Self      ☐ 2. Support from others      ☐ 3. Pay for

**Section 4 Psychosocial well-being and self-rated health [No proxy respondent is allowed for this section]**

**23. Do you feel like as follows?**

1. Thing keep getting worse as I get older      ☐ 1 No      ☐ 2 Yes
2. I have as much pep as I did last year      ☐ 1 No      ☐ 2 Yes
3. How much do you feel lonely?      ☐ 1 not much      ☐ 2 a lot
4. Little things bother me more this year      ☐ 1 No      ☐ 2 Yes
5. I see enough of my friends and relatives      ☐ 1 No      ☐ 2 Yes
6. As you get older you are less useful?      ☐ 1 No      ☐ 2 Yes
7. I sometimes feel that life is not worth living      ☐ 1 No      ☐ 2 Yes
8. I sometimes worry so much that I can't sleep      ☐ 1 No      ☐ 2 Yes
9. I am as happy now as I was when I was young      ☐ 1 No      ☐ 2 Yes
10. As I get older, things are ☐ 1. better      ☐ 2. worse      ☐ 3. same than/ as I though they should be.
11. I have a lot to be sad about      ☐ 1 No      ☐ 2 Yes
12. I am afraid of a lot of things      ☐ 1 No      ☐ 2 Yes
13. I get mad more than I used to      ☐ 1 No      ☐ 2 Yes
14. Life is hard for me most of the time      ☐ 1 No      ☐ 2 Yes
15. How satisfied are you with life today?      ☐ 1 No      ☐ 2 Yes

For coder

A62 [   ]  
A63 [   ] [   ] [   ]

A64 [   ]

A65 [   ]

A66 [   ]

A67 [   ]

A68 [   ]

A69 [   ]

A70 [   ]

A71 [   ]

A72 [   ]

A73 [   ]

A74 [   ]

A75 [   ]

A76 [   ]

A77 [   ]

A78 [   ]

A79 [   ]

A80 [   ]

A81 [   ]

A82 [   ]

		<u>For coder</u>
16. I take things hard	<input type="checkbox"/> 1 No <input type="checkbox"/> 2 Yes	A83 <input type="checkbox"/>
17. I get upset easily	<input type="checkbox"/> 1 No <input type="checkbox"/> 2 Yes	A84 <input type="checkbox"/>
24. How do you rate your health <u>compared with others at your age?</u>		A85 <input type="checkbox"/>
<input type="checkbox"/> 1 Very good <input type="checkbox"/> 2 Good <input type="checkbox"/> 3 Fair <input type="checkbox"/> 4. Poor		
<input type="checkbox"/> 5 Very poor		
25. How do your rate your health <u>this year compared with last year?</u>		A86 <input type="checkbox"/>
<input type="checkbox"/> 1. Better <input type="checkbox"/> 2. Same <input type="checkbox"/> 3. Worse		
<b>Section 5 Use of health preventive and promotive services</b>		
<b>5.1 Physical Check-Up</b>		
26. Do you know that you can get free physical check-up under the UC policy?		A87 <input type="checkbox"/>
<input type="checkbox"/> 1. Yes, I know. <input type="checkbox"/> 2. No, I do not know		
27. In last year, Did you have any following check-up or screening tests?		A88 <input type="checkbox"/>
<input type="checkbox"/> 1. Yes, I did. Please specify		A89 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 01. General physical examination <input type="checkbox"/> 02. Visual Acuity		A90 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 03. Breast examination <input type="checkbox"/> 04. Pap smear		A91 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 05. Hemoglobin concentration <input type="checkbox"/> 06. Urine analysis		A92 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 07. Stool examination <input type="checkbox"/> 08. Cholesterol/ Triglyceride		A93 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 09. Blood Sugar <input type="checkbox"/> 10. HIV		A94 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> 11. Chest X-Ray <input type="checkbox"/> 12. Tetanus vaccination		
<input type="checkbox"/> 13. Counseling <input type="checkbox"/> 14. Other specify.....		
<input type="checkbox"/> 2. No I did not. Because .....		A95 <input type="checkbox"/>
<b>[For respondent who answered no, skip to section 5.2]</b>		
28. Where did you get physical check-up or screening test?		
<input type="checkbox"/> 1. At registered hospital		A96 <input type="checkbox"/>
How much do you pay?.....Baht		A97 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Why did you have to pay?.....		A98 <input type="checkbox"/>
<input type="checkbox"/> 2. Other hospital, specify.....		
How much did you pay?.....Baht		
29. Did the physical check-up or screening test benefit your health and how?		A99 <input type="checkbox"/>
<input type="checkbox"/> 1. Yes. ....		A100 <input type="checkbox"/>
<input type="checkbox"/> 2. No. ....		



**5.2 Home visit and home care****For coder**

30. Did health worker ever visit your house in previous year?

☐ 1. Yes. ☐ 2. No [Skip to section 6]

A101 [ ]

31. If yes, what were the purposes of the visit?

☐ 1. Health survey

A102 [ ]

☐ 2. Providing health education/ information

A103 [ ]

☐ 3. Follow up case

A104 [ ]

☐ 4. Providing treatment☐ 5. Providing nursing care☐ 6. Providing physiotherapy☐ 7. Other specify.....

32. How regularly did health worker visit your home?

☐ 1. Regularly, every.....months

A105 [ ]

☐ 2. Irregularly

A106 [ ][ ]

33. Did you have to pay for the visit? Specify average amount of payment.....Baht/visit. (Enter 0 if did not pay)

A107 [ ][ ][ ]

34. Were you satisfied with the visit?

☐ 1. Yes, I was

A108 [ ]

☐ 2. No, I was not due to

A109 [ ]

☐ 1. Payment☐ 2. Unqualified health worker☐ 3. Poor service☐ 4. Other specify.....

**Section 6 Experience of catastrophic payment and unmet need**

35. In last year, Did you ever experience financial difficulty according to use of service?

A110 [ ]

[ ] 1. Yes, I did. Please describe the problem.....

A111 [ ]

Code for problem characteristic

- |                                      |                        |
|--------------------------------------|------------------------|
| 1. Lost savings                      | 2. Ask for gifts       |
| 3. Ask for hospital exemptions       |                        |
| 4. Borrow money from friend/relative |                        |
| 5. Sold assets                       | 6. Get commercial loan |
| 7. Other                             |                        |

A112 [ ][ ]

You health problem was .....

A113 [ ][ ]

Why did you experience it as you already hold the UC card?

.....

[ ] 2. No, I never experienced it.

For coder

36. In last year, did you ever experience not getting care even though you though you need it?

A114 [ ]

[ ] 1. Yes, I did. Please describe the problem.....

A115 [ ]

Your health problem was.....

A116 [ ][ ]

Why did not you have care?.....

A117 [ ]

Code for reason

- |   |          |
|---|----------|
| 1. Unaffordable                           |          |
| 2. Too old to get care                    |          |
| 3. Inconvenience in obtaining care        |          |
| 4. No accompanying person                 |          |
| 5. Service uncovered by the UC            |          |
| 6. Refused by provider when using UC card | 7. Other |

[ ] 2. No, I never experienced it.

**Section 7 Attitudes toward the UC scheme**

37. To what extent do you agree with or how do you rate the following issues in relating to the UC scheme? 1. The least 2. Less 3. Moderate 4. Much 5. Very much

	1	2	3	4	5	For Coder
1. Services are comprehensively covered by the UC scheme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A118 <input type="checkbox"/>
2. Registration and access to care only at registered hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A119 <input type="checkbox"/>
3. How well does the UC card enable access to ambulatory care?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A120 <input type="checkbox"/>
4. How well does the UC card enable access to A/E service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A121 <input type="checkbox"/>
5. How well does the UC card enable access to services according to chronic condition?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A122 <input type="checkbox"/>
6. How well does the UC card enable access to high cost care?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A123 <input type="checkbox"/>
7. How do you rate quality of drugs prescribed by your registered hospital?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A124 <input type="checkbox"/>
8. How do you rate quality of care provided by your registered hospital?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A125 <input type="checkbox"/>
9. How well does the UC card reduce financial burden in getting care?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A126 <input type="checkbox"/>
10. How are you satisfied with the UC card?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A127 <input type="checkbox"/>
38. If you have choice, would you like to change your registered hospital?						A128 <input type="checkbox"/>
<input type="checkbox"/> 1. Yes, I would.						
My preferred hospital is .....						
<input type="checkbox"/> 2. No, I would not.						

**Section 8 Socio-economic condition and living arrangements**

39. Are you still working?

☐ 1. Yes, I am. Please specify your occupation and income.

1..... Average monthly income is.....Baht

2..... Average monthly income is.....Baht

3..... Average monthly income is.....Baht

☐ 2. No, I am not working.

40. Do you have other sources of income?

☐ 1. Yes, I have. Please specify source and average amount monthly received

Pension.....Baht

Rental payment .....Baht

Interest from loan.....Baht

Interest from bank.....Baht

☐ 2. No, I do not have.

41. Do you get transferred money from any source?

☐ 1. Yes, I get. Please specify sources and average amount monthly received

Children.....Baht

Government support.....Baht

Other.....Baht

☐ 2. No, I do not get.

42. With whom are you staying with in this household?

☐ 1. Alone ☐ 2. Spouse☐ 3. Family ☐ 4. Relatives☐ 5. Other specify.....

43. How many people are living with you?.....persons

Name	Age	Sex	Status	Occupation	Average monthly income
Average total monthly income of other member					A147 [ ] [ ] [ ] [ ] [ ]

A129 [ ]

A130 [ ] [ ]

A131 [ ] [ ] [ ] [ ] [ ]

A132 [ ] [ ]

A133 [ ] [ ] [ ] [ ] [ ]

A134 [ ] [ ]

A135 [ ] [ ] [ ] [ ] [ ]

A136 [ ]

A137 [ ] [ ] [ ] [ ] [ ]

A138 [ ] [ ] [ ] [ ] [ ]

A139 [ ] [ ] [ ] [ ] [ ]

A140 [ ] [ ] [ ] [ ] [ ]

A141 [ ]

A142 [ ] [ ] [ ] [ ] [ ]

A143 [ ] [ ] [ ] [ ] [ ]

A144 [ ] [ ] [ ] [ ] [ ]

A145 [ ]

A146 [ ] [ ]

44. Average monthly household expenditures are.....Baht A148[ ][ ][ ][ ]
45. Who are responsible for daily household expenses? A149 [ ]
- [ ] 1. elderly respondent [ ] 2. Spouse [ ] 3. Children
- [ ] 4. Relative [ ] 5. Other specify.....
46. Who is the owner of this house? A150 [ ]
- [ ] 1. elderly respondent [ ] 2. Spouse [ ] 3. Children
- [ ] 4. Relative [ ] 5. Rental house
- 47 Do you own land? A151 [ ]
- [ ] 1. Yes, I have.....Rai [ ] 2. No, I do not have land A152 [ ][ ][ ][ ]
48. Do you own following durable goods?
- |                     |         |                           |         |
|---------------------|---------|---------------------------|---------|
| [ ] 1. Refrigerator | A153[ ] | [ ] 6. Bicycle            | A158[ ] |
| [ ] 2. Television   | A154[ ] | [ ] 7. Motor Bike         | A159[ ] |
| [ ] 3. Radio        | A155[ ] | [ ] 8. Agricultural motor | A160[ ] |
| [ ] 4. Video        | A156[ ] | [ ] 9. Car                | A161[ ] |
| [ ] 5. Telephone    | A157[ ] | [ ] 10. Air condition     | A162[ ] |
49. What do you rate your household economic status? A163 [ ]
- [ ] 1. Much hardship [ ] 2. Some hardship
- [ ] 3. No hardship in daily living but has some for unexpected events
- [ ] 4. No problem at all
50. The person who responded to the interview is A164 [ ]
- [ ] 1. Elderly respondent A166 [ ][ ]
- [ ] 2. Proxy respondent aged.....educational level..... A167 [ ]
- [ ] 3. Both

**End of the Questionnaire**  
Thank you very much for your corporation

Questionnaire ID [ ][ ][ ][ ][ ]

**A3.2 Questionnaire Form 2: Illness and service use in the previous month**

	B1	B2	B3	B4	B5
<b>Question</b>	What is (are) your illness or injury?	Did you quit your daily activities according to the illness?	Did it need admission?	What type of care did you get?	If you did nothing, why?
<b>Instruction</b>	Copying the disease or symptom in Q13,14 section 2	Including quit from work or bedridden.		Specify sequence of care sought by respondent	Only for those who did not seek care
<b>Code</b>		Specify number of days, if did not quit specify 0	0 No 1 Yes	0 do nothing 1 self-prescribed 2 herb/trad med 3 health center 4 district hospital 5 provincial hospital 6 other pubic hospital 7 private clinic 8 private hospital	1 not severe 2 uncured 3 no accompanying person 4 problem in transportation 5 too old to get care 6 other specify.
<b>Episode 1</b>				1.	
				2.	
				3.	
<b>Episode 2</b>				1.	
				2.	
				3.	
<b>Episode 3</b>				1.	
				2.	
				3.	
<b>Episode 4</b>				1.	
				2.	
				3.	
<b>Episode 5</b>				1.	
				2.	
				3.	
<b>Episode 6</b>				1.	
				2.	
				3.	

327

Questionnaire ID [ ][ ][ ][ ][ ]

**A3.3 Questionnaire Form 3: Care pattern for chronic conditions**

	C1	C2	C3	C4	C5	C6
<b>Question</b>	What is (are) your chronic conditions?	How long have you been sick with this condition?	Where did you get care from?	If you did not treat, why?	How regularly do you get care?	If irregularly, why?
<b>Instruction</b>	Repeat the conditions specified in Q15 section 2 here		Specify main source of treatment	Only for respondent reported did noting	Specify frequency of care received	
<b>Code</b>		Specify number in years	0 do noting 1 self-prescribed 2 herb/trad med 3 health center 4 district hospital 5 provincial hospital 6 other public hospital 7 private clinic 8 private hospital	1 not severe 2 uncured 3 no accompanying person 4 problem in transportation 5 too old 6 other	Every...month 99 if irregular	1 not severe 2 uncured 3 no accompanying person 4 problem in transportation 5 too old 6 other
<b>Episode 1</b>						
<b>Episode 2</b>						
<b>Episode 3</b>						
<b>Episode 4</b>						
<b>Episode 5</b>						
<b>Episode 6</b>						



Questionnaire ID [ ][ ][ ][ ][ ]

C7	C8	C9	C10	C11	C12	C13
What benefit do you use in getting the care?	Why didn't you use the UC card?	How much did you pay for medical care?	What did you pay for?	How much did you pay for other?	What was your source of payment?	Were you satisfied with the service received? Why?
	Only for respondent did not use UC card		Only for respondent who used UC card	i.e. transportation		Specify reason of unsatisfaction
1 UC card 2 CSMBS 3 SSS 4 TAI 5 Private insurance 6 Out-of-pocket 7 Other	1 use service at non-registered hospital 2 uncovered service 3 get other better benefit 4 questioning quality of care 5 willing to pay 6 other	Specify amount of money paid out-of-pocket	1 registration 2 service fee 3 donation 4 non Ed drugs 5 other	Specify amount of money paid out-of-pocket	1 savings 2 children 3 gifts 4 borrowing 5 sold assets 6 commercial loan 7 other	10 satisfied unsatisfied due to 21 poor quality of drug 22 poor quality of service 23 payment 24 discrimination 25 unqualified doctor 26 other

Questionnaire ID [ ][ ][ ][ ][ ]

**A3.4 Questionnaire Form 4: Hospitalization in the previous year**

	D1	D2	D3	D4	D5
Question	What was your illness?	What hospital(s) were you admitted?	How long did you stay in the hospital?	What benefit did you use?	Why didn't you use the UC card?
Instruction	specify disease or symptom	Specify name of hospitals in sequence	Specify number of days	Specify the benefit(s) used	Only for respondent did not use UC card
Code		1 district hospital 2 provincial hospital 3 other public hospital 4 other public hospital outside the province 5 private hospital		1 UC card 2 CSMBS 3 SSS 4 TAI 5 Private insurance 6 out-of-pocket 7 other	1 use service at non-registered hospital 2 uncovered service 3 get other better benefit 4 questioning quality of care 5 willing to pay 6 other
Episode 1					
Episode 2					
Episode 3					
Episode 4					
Episode 5					
Episode 6					



### **A3.5 Open ended questions for in-depth interview with health administrators and managers**

1. What do you think about the UC policy components in relation to older people?

- Providing insurance to all elderly people, benefit package, beneficiary registration
- Per capita budget allocation and payment methods adopted by the province/CUP
- Establishment of PCU

2. How does the system work and how is it managed? And what are the problems and constraints in policy implementation?

- Registration/ education, information, and communication
- Active purchasing functions/ regulation
- establishment of primary care unit (PCU),

3. What are the impacts of policy components on providers and their responses?

- Health centres
- District hospitals
- Provincial hospitals

4. what are the potential impacts on elderly in terms of quality of care, access, and financial protection?

- Providing insurance to all elderly people
- budget allocation and payment methods
- establishment of PCU

### **A3.6 Open ended questions for focus group discussion with providers**

1. What do you think about the UC policy components in relation to older people?

- Providing insurance to all elderly people, benefit package, beneficiary registration
- Per capita budget allocation and payment methods adopted by the province/CUP
- Establishment of PCU

2. How does the system work and how is it managed? And what are the problems and constraints in policy implementation?

- Payment methods and payment within CUP
- Service provision in hospital
- establishment of primary care unit (PCU),

3. What are the impacts of policy components on health facilities and how do you respond to the policy in addition to problems and constraints?

- Providing insurance to all elderly
- Budget allocation and payment methods
- Establishment of PCU

4. what are the potential impacts on elderly in terms of quality of care, access, and financial protection?

- Providing insurance to all elderly people
- budget allocation and payment methods
- establishment of PCU

### **A3.7 Open ended questions for focus group discussions with elderly people**

1. What do you think about the following issues?

- Providing universal insurance coverage for the elderly
- establishment of primary care unit (PCU)

2. As the MWS existed prior to the UC scheme, what are the differences you have seen so far between the two schemes?

- Condition of access
- Service provision at health centre, district hospital, provincial hospital
- Quality of services and care provided by health centre/ district hospital/ provincial hospital

3. What did you do when you were ill? How and where did you seek care from i.e. for minor conditions, serious conditions? Did you make the decision by yourself when and where to get care or it was made by the other in the family?

4. What were your sources of payment to pay the costs of care?

5. Did you ever experience financial difficulties according to paying medical care? If yes, when, why, and how did they cope with it? If no, have you ever seen other people faced with this problem and how did they cope with it in the previous year?

### **A3.8 Open ended questions for in-depth interview with individuals with catastrophic expenditure**

1. Personal and household information
2. What was/were your health illnesses in the previous year? Could you provide the past history of your illnesses?
3. Where did you seek care for your illness? Why did you choose the care from particular source? Did you make the decision where and how to seek care by yourself or was it made by other family members?
4. Did you use the UC card in getting care? if not, why?
4. How much did you pay for the care and where did the money come from?
5. What were the implications of the payments?

## Appendix 4: Interview schedule

### A4.1 Household survey schedule

Date	Activities	Note
18/04/02	Meeting with field supervisors in Khonkhaen	Clarification work plan and scope and detail of field-supervisor work.
19-20 /04/2002	Providing a 2-day raining for interviewers in Faculty of Public Health, Khonkhaen University	Day 1 : providing information on overview of health problem and health insurance among Thai elderly, the UC scheme, overview of health care system in Yasothon, and explaining the questionnaire. Day 2: Practicing interview in one community in Khonkhaen province and discussing for the problem and issues for better understanding.
21/04/2002	Departure Khonkhaen to Yasothon	The PCMO provided a greeting dinner for the team at Mitre Country restaurant
22/04/2002	Survey in cluster No 107, 108, and 109 (Sai Moon municipality)	There were not enough samples in cluster 109 since this is a new village and most families are young adults.
23/04/2002	Survey in cluster 110 (Sai Moon municipality) 111 (Kud Chum municipality) 207 (Kudchum rural area)	All questionnaires were checked and coded by field supervisors and rechecked by the researcher day by day.
24/04/02	Survey in 3 rural clusters in Kud Chum district: cluster 208, 209, and 210	Cluster 208 was a small village and there were only 18 samples. Cluster 210; households were very scattered. There was a meeting with interviewers in the night to discuss problems and clarify some mistakes in questionnaire.
25/04/2002	Survey in two urban and one rural clusters in Kum Khuean Khaew district: 112, 113 and 211	There were only 16 elderly persons in cluster 211.
26/04/2002	Survey in three rural clusters in Kum Khuean Khaew district: cluster 212, 213, and 214	Data entry form was developed and tested.
27/04/2002	Survey in two urban and one rural clusters in Pa Teaw district: cluster 114, 115 and 215	
28/04/2002	Holiday	Two trained staffs started entering data in Yasothon.



## Appendix 4: Interview Schedule

Date	Activities	Note
29/04/2002	Survey in 2 urban and 1 rural clusters in Kow Wang district: 117, 118, and 219	Cluster 117 looked like rural area. Cluster 118 was more urbanized but there were only 7 elderly so households in nearby block were included to meet target 24. The rural cluster 219 (Siri Pattana village) was much better in term of SES since most households had at least one member working aboard in Taiwan.
30/04/2002	Survey in two urban and one rural clusters in Lueng Nok Tha district: cluster 119, 120, and 220.	The urban clusters are located next to the district hospital. The rural cluster (220) is only 2 kms away from the hospital.
1/05/2002	Survey in two urban and one rural clusters in Lueng Nok Tha district: 121, 122, and 222 Instruction was provided for the re-interview team.	Five health workers were recruited for a re-interview team.
2/05/2002	Survey in 2 rural clusters in Leung Nok Tha: 221 and 223, and one rural cluster in Thai Chareaun district: 224 An re-interview was done in cluster 107	The urban cluster in Muang district 101 is quite worrying since it's less populated and large area, not enough sample is expected and next block is planned to reach the target.
3/05/2002	Survey in 3 urban clusters in Mueang district: 101, 102, and 103 An re-interview was done in cluster 214.	The habitats in cluster 101 are scattered and there were not enough target samples. Moreover, the majority of elderly in the other two clusters were CSMBS beneficiaries so only 30 respondents could be identified in these three clusters.
4/05/2002	Survey in 3 urban clusters in Mueang district: 104, 105, and 106	Additional samples were added to the target in each cluster to supplement the low samples found yesterday
5/05/2002	Holiday	
6/05/2002	Survey in 3 rural clusters in Mueang district: 201,202, and 203, and one urban cluster in Kud Chum district, 123.	
7/05/2002	Three rural clusters in Mueang district were surveyed: 204,205, and 206. One urban cluster, 116, in Maha Chana Chai was survey.	Cluster 116, Moo 2 Fayad in Maha Chana Chai looked like rural area later than urban one.
8/05/2002	Survey in one urban cluster, 124 and 3 rural clusters in Maha Chana Chai: 216, 217, and 218.	The last day of household survey
9/05/2002		1 <sup>st</sup> round data entry was complete
12-20/05/2002	2 <sup>nd</sup> data entry	This was done by another team in Bangkok

**A4.2 In-depth interview and focus group discussions**

Date	Position	No. of participant	Method
29/07/2002	Provincial Chief Medical Officer (PCMO)	1	In-depth interview
29/07/002	Deputy Provincial Chief Medical Officers No.1	1	In-depth interview
30/07/2002	Non-communicable disease control section (NCD)	2	Focus group discussion
30/07/2002	Claim unit in the provincial hospital	8	Focus group
31/07/2002	Deputy Provincial Chief Medical Officer No. 2	1	In-depth interview
31/07/2002	Physician in the provincial hospital	4	Focus group
1/08/2002	Director of Kud Chum district hospital	1	In-depth interview
1/08/2002	Director of Maha Chana Chai district hospital	1	In-depth interview
2/08/2002	Deputy director of the provincial hospital	1	In-depth interview
.....			
15/08/2002	District Health Officer	6	Focus group
15/08/2002	Nurse in the provincial hospital	8	Focus group
16/08/2002	Health worker who are responsible for NCD	8	Focus group
16/08/2002	Nurse in primary care unit (PCU)	8	Focus group
20/08/2002	Health workers in primary care unit (PCU)	9	Focus group
20/08/2002	Case study of cataract using service in a private clinic (case in box 1)	1	In-depth interview
21/08/2002	Case study of informal payments for artificial lens in IOL operation ( case in box 4)	1	In-depth interview
	Case study of heart disease with frequent use of services from various sources (case in box 5)	1	
22/08/2002	A case study of informal payments for artificial lens in IOL operation	1	In-depth interview
23/08/2002	A case study of uninsured asking for fee exemption	1	In-depth interview
9/09/2002	Head of insurance management section	1	In-depth interview
10/09/2002	Nurse in district hospitals	8	Focus group
11/09/2002	Revisiting case in box 5	1	In-depth interview
	Case study of chronic disabilities admitted in a private hospital (case in box 2)	1	
12/09/2002	A case study of informal payments for artificial lens in IOL operation	1	In-depth interview
13/09/2002	A case study of traffic accident injury (case in box 3)	1	In-depth interview
16/09/2002	Elderly aged <70 years in a rural area where a PCU is located	6	Focus group

#### Appendix 4: Interview Schedule

Date	Position	No. of participant	Method
17/09/2002	Revisiting case in box 1	1	In-depth interview
18/09/2002	Elderly aged <70 years in an urban area where a PCU is located	7	Focus group
19/09/2002	Elderly aged >70 years in a rural area where a PCU is located	7	Focus group
20/09/2002	Elderly aged >70 years in an urban area where a PCU is located	6	Focus group
12/11/2002	Revisiting case in box 1	1	In-depth interview
13/11/2002	Revising case in box 5	1	In-depth interview
14/11/2002	Elderly aged <70 years in a rural area without a PCU	6	Focus group
14/11/2002	Elderly aged >70 years in a rural area without a PCU	6	Focus group

## **APPENDIX 5: HOUSEHOLD ECONOMIC STATUS**

This appendix paper assesses household economic status data gathered from this survey to identify which is suitable to represent household ability to pay in the analysis: household income, expenditure, assets, or self-assessed economic status. The paper starts by providing some literature review in relation to measuring household economic status, mostly from the World Bank literature. Questionnaire design and data collection is described in the following section in addition to problems and limitations of the data set. Discussion on each economic indicator is undertaken in the third section by employing evidence from the survey followed by a conclusion at the end.

### **A 5.1 Measuring household economic status**

Household economic status, education, and occupational status are widely used indicators of socioeconomic status (SES); though moderately correlated, each of these measures can capture distinctive aspects of social position, and they are not interchangeable (Stewart, 2002). Household economic status is one crucial determinant of health and other social aspects such as education; in addition, it is also crucial in enabling use of health services aside from other factors such as availability of services, insurance coverage, social networks and support, transportation, and accompanying person for the elderly and disabled persons (Andersen, 1995). Moreover, it has been frequently used to classify people according to their economic status in order to determine how well social services are distributed in a particular society. Fairness of financial distribution in the health care system is an example (WHO, 2000). In this section, theoretical and practical issues in relation to household economic status will be reviewed and discussed subsequently.

*Household*, a common sampling unit in many surveys, is defined as members who have a common source of major income, live under the same roof or within the same compound, and have a common provision for other essentials of living, or is simply a group of people who live and eat together (Casley and Lury, 1987; UN, 1989; Johnson et al., 1990). According to the definition, there are significant problems concerning individuals who just board (eat with the household) or lodge (live with the household). According to the United

Nations guidelines, a boarder who does not lodge should be included but the lodger who does not board should be excluded. However, this definition alone may not be applicable to those who lodge and board such as domestic servants and additional criteria are needed, i.e. acknowledgement of the authority of a single head of household. The complexity of living arrangements in developing countries make this issue more complicated, such as compound living arrangements, and the fact that households are often production as well as consumption units. According to the definition provided by the United Nations, the household is regarded as a consumption unit, while the majority of people in developing countries are accumulated in agriculture and non-farm microenterprise. Some practical issues may also arise at the time of data collection in identifying household member such as disengaged coresidence or part-time coresidence.

*Economic status* could be measured in various ways such as income, consumption, or wealth. Income is clearly a variable of critical importance in the household economy, as it provides the resources to finance current consumption and to undertake any saving (McKay, 2000). However, income is a sensitive issue and problematic in measurement, especially in developing countries where the majority of people do not have a regular income but one which tends to vary seasonally, such as those in agriculture sector and self-employment (Deaton, 1997; Deaton and Grosh, 2000). Therefore, many economists proposed household consumption as an alternative to measure household economic status, especially for developing and transitional economies. Household consumption is argued to be less variable and sensitive than income data, provides a more direct picture of the standard of living since it tracks goods and services actually used by the household, and is posited by some analysts to provide a more accurate picture of long-term household wealth levels (Inserra, 1996). Assets such as inherited wealth, savings, or ownership of homes or durable goods have been proposed as alternatives, especially when income or expenditure data are not available, since wealth is a source of economic security providing an index of a household's ability to meet emergencies or absorb economic shocks such as unemployment and illness (Stewart, 2002). Even though income and wealth are positively correlated, they are not interchangeable, as shown in the example of an elderly person with a modest fixed income but substantial accumulated wealth. Though assets could be exchanged for income, they are used for only important and catastrophic expenses as a last resort.

*Household income* represents total purchasing power available to a household in a given time period and could be divided into factor income and non-factor income (McKay, 2000). Factor income refers to payments received in cash or in kind by households or their members in return for supplying factors of production that they own, such as labour, goods, or land. Non-factor income refers to net transfers (in cash or in kind) received from sources outside the household that do not need to be repaid, such as pension, money transferred from children, kin, or government etc. With regard to factor income, the fundamental issue that arises is the definition of productive activities, which can be particularly problematic in developing countries where so many economic activities take place outside the market, such as household own-account activities in producing goods or services. Practically, only own-account production of goods within the household is usually included in the definition while own-account production of services within the household is usually excluded (McKay, 2000). Valuation of own-account products is another problem – should consumer price or producer price be applied where the household is both production and consumption unit? Whichever is used, it should be applied consistently for all households in the survey. Household income has been argued to be better than consumption data at least in three aspects: it can be used to measure a household's standard of living (especially the dynamic of poverty), to understand determinants of poverty and to estimate household savings (McKay, 2000). Household consumption-based measures can also be used to measure living standards and for most purposes are probably superior to income-based measures, at least in developing countries; the latter are less able to distinguish between transitory and chronic poverty - an important distinction for studying the dynamic of poverty and directing assistance to those who most need it (McKay, 2000).

Some economists prefer *household consumption* in measuring living standards, since it is more directly and closely related to current standard of living than is current income; income is a means of financing consumption, but it is consumption that provides utility. In addition, current income is often volatile from one year to another, especially among those engaged in self-employment, agriculture, or reliant on transfers from either public or

private sources. Therefore, according to permanent income<sup>78</sup> or life-cycle models<sup>79</sup>, current consumption is more stable than current income, given that it can be smoothed to some extent by saving and dissaving or borrowing (Deaton, 1997; McKay, 2000). If this is true then measuring consumption is not only useful in its own right but also provides an indication of lifetime resources (Deaton and Grosh, 2000). However, the validity of this hypothesis has been the subject of a great debate and research, particularly in developing countries where people are poor, family size is large, life expectancy is relatively low, the proportion of old people is small and very few of them live alone (Deaton, 1997). Consumption is not equivalent to expenditure (purchases). For most perishable goods, consumption is closely tied to purchases; for less perishable goods, some averaging across goods may occur in a fairly short period of time; but for major durable goods, expenditures and consumption are not closely related in the short run.

Practically, income-based measurement of living standards has been used in most developed countries, where main income is generally wage income and so it is easier to collect, less costly, and with fewer errors due to recall bias compared with collecting consumption data. Consumption-based measurement requires a long module of desegregated both food and non-food consumption that consumes much more time in collecting compared with income-based measurement. Consumption-based measurement is preferred at least in developing countries for various reasons; income is generally from multiple sources and can be defined in different ways, in-kind flows are difficult to identify and value, sensitivity of income data, and fluctuation over time, etc. However, gathering an accurate picture of either household income or consumption data is not easy and quite expensive in both developed and developing countries, and multiple visits of interviewers are needed to complete the questionnaire.

---

<sup>78</sup> The central idea of the **permanent-income hypothesis**, proposed by Milton Friedman in 1957, is simple: people base consumption on what they consider their "normal" income. In doing this, they attempt to maintain a fairly constant standard of living even though their incomes may vary considerably from month to month or from year to year. As a result, increases and decreases in income that people see as temporary have little effect on their consumption spending.

<sup>79</sup> The **life-cycle hypothesis** asserts that people try to maintain the highest, smooth consumption path that they can get then a person's consumption at any age is proportional to his or her lifetime resources. As a result, they are savers during their working years, and dissave during retirement.

A further issue of concern in relation to measuring household income or consumption is *household size and its composition*, since differences in number of members and composition in terms of age and sex means differences in required resources in order to meet a standard of living. In addition, the standard apparatus of welfare economics and welfare measurement concerns the well-being of individuals. It is clear that two households with an equal household income or consumption may not have equal welfare if the number of household members is not equal. There are two issues to deal with regarding household size and its composition: firstly, to explore how resources are allocated within the household or to weight each individual in the household according to their age and sex (equivalence scales), and secondly, economies of scale of having more people in a household exist.

To adjust total income or consumption according to household size, various studies simply used per capita income or expenditure by dividing income or expenditure by the number of people in each household. This method assumes that everyone in the household receives an equal allocation but it fails to recognize that not everyone in the household has the same needs and ignores some possibilities of there being economies of scale from living together. Difference in needs according to age and sex might be adjusted by employing either food or non-food (adult good) consumption data from households with differences in size and composition of members, to explore how consumption has been changed according to an increase in numbers of particular groups. Some studies employed calorie requirements of different age groups and converted this to the value of local foods in monetary terms, which was used as a weight for each age group. Determining need according to food consumption will attribute low need to children and elderly compared to other adults, and then we will find that there were relatively few children or elderly in poverty (Deaton, 1997). In general, different approaches tend to provide different weights and give different results.

Patterns of intrahousehold resource allocation vary from country to country, and may be more complicated in developing countries due to the complexities of household and living arrangements in addition to cultural context. For the elderly, even though the requirement for food might be less than for other adults, requirements for other needs are high, such as for health care, so their total needs may exceed those of other adults. In addition, most elderly in eastern countries, particularly in Thailand, live with their family; relatively few



of them live alone. And those who live alone usually have at least one child or relative staying very nearby who can support and meet many of their needs (Knodel et al., 1999). Financial support from children is also common and is the main source of income among the elderly, especially those who are not working. This is due to a pervasive aspect of Thai cultural values that provides a strong normative basis for the prevailing pattern of family support<sup>80</sup>. Moreover, evidence from this study revealed that the majority of older people were preserving their dignity through being householders and landlords, in which case access to household resources might not be a problem.

It is also conceivable that two can live more cheaply than one, since they can share some public goods, i.e. housing, or even some private goods that they can buy more of and get at a cheaper price. If this is true then larger households should have higher per capita consumption of private goods, such as food, provided that they do not substitute too much for the effectively cheaper public goods. However, evidence from both developed and developing countries shows exactly the opposite; at constant per capita total expenditure, the per capita consumption of foods decreases with household size (Deaton and Paxson, 1998). The authors explained that this might be due to a variety of reasons, such as economies of scale in food consumption or preparation, less wastage of food among larger households, or measurement error, etc.

Measurement of income and expenditure through household surveys requires lengthy modules with many detailed questions; therefore, dedicated health surveys rarely include full income and expenditure modules. An alternative approach to measure household economic is measuring *household assets or wealth*. Household assets provide useful information about long-term economic status; they represent sources of potential future income. However, net worth (the value of household assets minus household liabilities) is a more useful measure of household welfare than simply assets. It is easier to collect accurate data for assets than for income or consumption since assets are conceptually easy to understand, physical assets can be visually verified, assets data may be less sensitive than income data, collecting information on a stock variable does not involve as much recall as

---

<sup>80</sup> This is a strong sense of moral obligation that adult children should support and care for elderly parents, “Katanyu Katawethi”

collecting information on a flow variable, and assets do not fluctuate like income does (Inserra, 1996). However, to compare the value of assets across households and time, they must usually be converted to a monetary value which is complicated. In addition, as assets change more slowly than income, they can not capture the same sort of short-term changes in economic status that income can. A wealth index or score measured in terms of selected number and weight of household durable assets has been proposed as an alternative to measure household wealth in developing countries where data on income or expenditure are not available (Filmer and Pritchett, 1998). The latter approach employs a statistical technique, Principal Component Analysis (PCA), to assess the weight or factor score of each asset and construct a ranking of households according to an asset index; however, it is not being claimed to be better than household income or consumption in classifying household socioeconomic status.

In addition, the PCA is performed on a country by country basis using data from different survey instruments so it is neither able to compare the results across countries nor over a period of time in the same population (Ferguson et al., 2002).

*Subjective economic condition* is another measure being used by some researchers; some studies indicated that the subjective experience of financial strain is more closely related to health than is the actual level of income (Ullah, 1990; Wilkinson, 1996; Cheng et al., 2002). This might be true since the influence of income on health depends on its adequacy to meet personal and family needs. However, there are various sources of potential bias in identifying welfare from subjective data (Ravallion and Lokshin, 2000). These include mode variability, subjective to individual's expectation, personality traits, and previous experiences of financial strain.

## **A 5.2 Questionnaire design and data collection**

Considering the objectives of the study in addition to time and budget constraints, only a brief questionnaire composed of eleven questions about household economic status was used in this survey. All four aspects of measuring household economic status mentioned earlier were employed: income, expenditure, assets, and self-assessed economic status. The survey intended to measure availability of cash to pay for health care rather than measuring total household income or consumption. Therefore, in-kind income and consumption of

household own-account production of goods were not included, nor consumption of goods from natural resources. In gathering household income and expenditure data, respondents were asked to provide their current average monthly household income from various sources in addition to an aggregated average monthly expenditure. Obtaining household economic data was done at the end of the interview on the assumption that if respondents understand the objective of the survey and are familiar with the interviewer, they might feel less reluctant to respond. Household in this study was defined as those staying together and sharing food within the same house.

In order to ascertain household income, respondents' cash incomes were asked first followed by other members' incomes. There were three main questions focusing on individual incomes: income from work, other sources, and transferred money. Respondents were asked first whether they were working, if yes, then what their jobs were (up to three jobs provided) and how much they earned on average per month from each job. Incomes from other sources, such as pension, rental fee, and interest from savings and loans, formed the second question. The third question was money transfer; respondents were asked whether they got welfare allowances or financial support from their children or others and how much they got on average per month. Then incomes from these sources were summed up to total individual cash incomes.

Following individual income, living arrangements and household members' incomes were asked subsequently. Household members' detailed information was gathered such as age, sex, their relationship with the respondent, occupation, and average monthly cash income for those who were working<sup>81</sup>. For those who were working in the same family enterprise as the respondent, only incomes from other sources were counted. Then incomes from the respondent and other members were summed up to total household incomes.

Questions on average monthly household expenditure<sup>82</sup> and person responsible for the expenses then followed. Respondents were asked to provide average monthly household

---

<sup>81</sup> Even though detailed information of other members in the particular house was collected, it was only used to calculate household incomes but was not either coded or recorded in the database.

<sup>82</sup> Household expenditures included only cash expenses.

expenses and to indicate the person responsible for the expenses. Questions in relation to household assets were included in the following section; these included ownership of house, land, amount of land owned, and various durable assets. A list of durable assets was provided to check whether they were present: refrigerator, television, radio, fan, telephone, bicycle, motor bike, agricultural motor, car, and air conditioning. At the end, respondents were asked to self-assess their own household economic status as: many difficulties in general living, some difficulties in general living, no difficulty in general living but only for catastrophic expenses, and no difficulty at all.

### **A 5.3 Problems and limitations of the dataset**

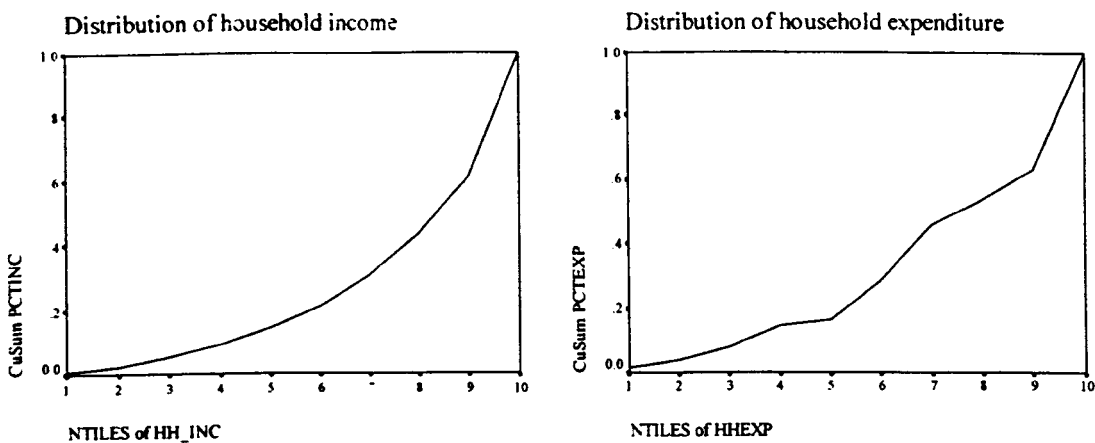
The use of only a brief questionnaire on household economic status gives rise to a number of limitations. Firstly, a household was confined to only members living and eating together in the same house, while some respondents were living in a separate house, near to their children, but they still shared food and other necessities for daily living. Secondly, income included only cash income; neither own-account production of goods consumed within the household or products gathered from natural resources were covered. Therefore, household income was underestimated, especially among those in the agriculture sector, mostly in rural areas. Thirdly, the question about transfer money did not spell out clearly to include only inter-household transfer, so intra-household transfer money might exist and be double-counted in household income. Even though respondent's incomes from various sources were collected in detail, other household members' incomes were collected in an aggregated form so their accuracy might be lower. Finally, instead of measuring household consumption, only one question about average monthly household expenditure was employed, therefore it likely did not accurately capture the actual household consumption but underestimated it, especially among those in rural areas since cash might be limited among them, but there is plenty of natural food during rainy season such as fish, vegetables, insects etc<sup>83</sup>.

---

<sup>83</sup> It was rainy season at the time of data collection; there were many people catching fishes in the Moon River and also those in urban areas.

### A 5.4 Selecting household economic indicators

In comparison with household income and expenditure, assets were easier to collect and more accurate since they were observable. However, assets might be a better representation of long-term wealth rather than household ability to pay. In addition, it is already known that old people might be better off in terms of fixed assets but usually have low disposable incomes and need cross-subsidization from younger working people. Results from the survey revealed that, among older people who were not working, financial support from children played a crucial role in their daily living, in addition to public welfare for those who were poor (details in chapter 6 and appendix 6). To sell an asset in order to get money for daily living is uncommon, but this may be the case for important events within a family such as sickness, funeral, and marriage, etc. Self-assessed household economic status is subjective and varies from person to person according to their personality, expectations, and experiences; therefore, it might not be able to represent the actual household purchasing power or living standard. Thus only household monthly income and expenditure are considered below by using some results from this survey.



**Figure A5. 1 Distribution of household income and expenditure by household income and expenditure deciles respectively**

Figures A5.1 illustrates the percentage accumulation of total household cash incomes and expenditures by household income and expenditure deciles respectively. It is noticeable that the distribution of household cash income was smoother than that of household

expenditure. Taking the difference in household size into account, simple per capita cash income and per capita cash expenditure were calculated and ranked by income and expenditure quintiles respectively. Mean, median, and standard deviation of per capita cash income and expenditure by income and expenditure quintile are shown in Tables A5.1 and A5.2 respectively. Average per capita cash income of the 1<sup>st</sup> and 2<sup>nd</sup> quintiles was lower than per capita expenditure. This was consistent with the actual household cash incomes and expenditures in the survey; 30 and 34% of respondents in urban and rural areas respectively reported their monthly cash household incomes to be less than expenditures. Average per capita cash income was greater than expenditure for all quintiles when individuals were ranked by per capita expenditure as shown in Table A5.2.

**Table A5. 1 Mean per capita income and expenditure by income quintile (Baht in 2002 current price)<sup>84</sup>**

Quintile	Obs	Per capita monthly income			Per capita monthly expenditure		
		Mean	Median	SD	Mean	Median	SD
1	169	152	150	72	396	333	628
2	154	342	333	47	416	333	300
3	195	587	500	100	579	500	536
4	202	1052	1000	184	689	632	771
5	227	2579	2000	1880	1061	1000	1049
Average	947	942	667	1319	628	500	788

Note: the number of observations in each quintile was not equal due to different weights were given to urban and rural respondents in the analysis.

**Table A5. 2 Mean per capita income and expenditure by expenditure quintile (Baht in 2002 current price)**

Quintile	Obs	Per capita monthly income			Per capita monthly expenditure		
		Mean	Median	SD	Mean	Median	SD
1	178	531	325	804	170	167	68
2	183	688	460	726	337	333	41
3	158	860	615	1009	494	500	32
4	193	1004	933	727	685	666	82
5	235	1677	1460	2019	1508	1250	1130
Average	947	942	667	1319	628	500	788

Note: the number of observations in each quintile was not equal due to different weights were given to urban and rural respondents in the analysis.

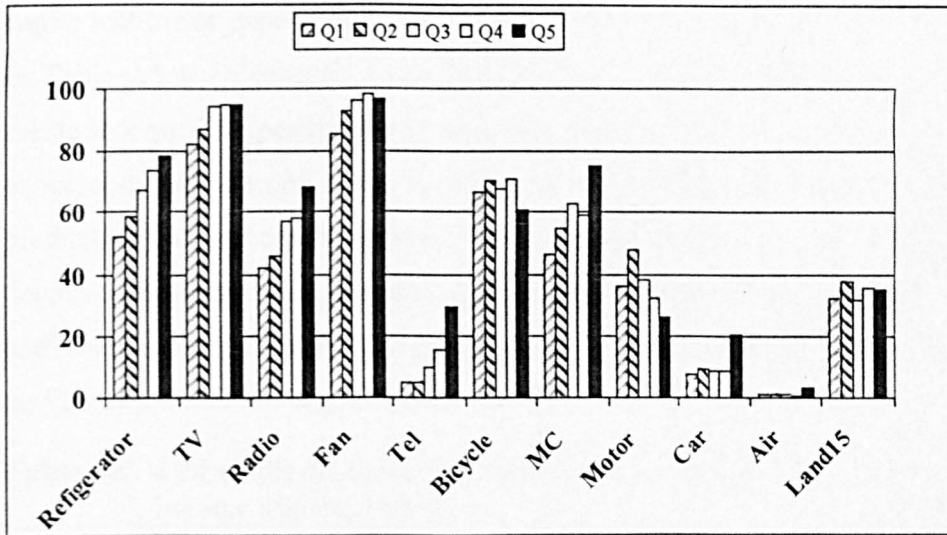
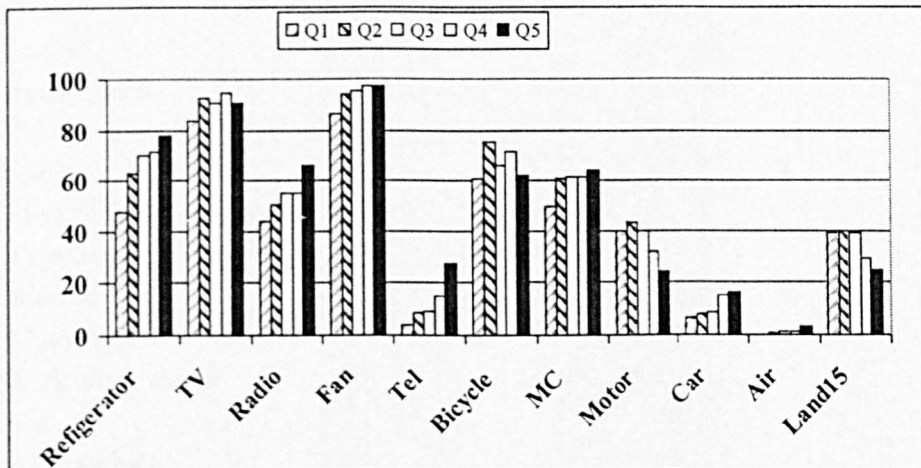
<sup>84</sup> The exchange rate in 2002 was 1\$ ≅ 43 Baht and 1£ ≅ 62 Baht

Differences in the distribution of individuals by both approaches were also apparent, as shown in Table A5.3. The agreements between the two approaches varied from 26 to 44%; the maximum agreements were in the 1<sup>st</sup> and 5<sup>th</sup> quintile, 44%. The correlation coefficient between two approaches was only 0.46.

**Table A5. 3 Per capita income quintile by per capita expenditure quintile**

		Household per capita expenditure quintile					Total (obs)
		1	2	3	4	5	
Household per capita income quintile	1	0.44	0.22	0.15	0.13	0.6	1 (169)
	2	0.29	0.34	0.18	0.11	0.8	1 (154)
	3	0.17	0.20	0.25	0.20	0.18	1 (195)
	4	0.9	0.17	0.14	0.38	0.22	1 (202)
	5	0.7	0.14	0.15	0.20	0.44	1 (227)
Total (obs)		0.21 (178)	0.22 (183)	0.17 (158)	0.20 (193)	0.20 (235)	1 (947)

Household assets were not chosen as a proxy to determine household economic status, but as assets are visually verifiable, they can be used to identify whether income or expenditure is more appropriate to be employed as an indicator to represent household economic status. Most durable goods have positive correlation with household per capita cash income or expenditure, except owning a bicycle, agricultural motor, and land of 15 Rai or more (Figure A5.2 and A5.3). There was no significant difference in owning bicycle by either income or expenditure. An agricultural motor is an underprivileged good; owing an agricultural motor decreased as either income or expenditure increased. Only those engaged in the agriculture sector own an agricultural motor, suggesting that those who own an agricultural motor are the worst off. There was no difference in owning land by income quintile but there was by expenditure quintile.

**Figure A5. 2 Household assets by per capita income quintile****Figure A5. 3 Household assets by per capita household expenditure**

Owning 15 Rai and over of land decreased as per capita expenditure increased. Land is an essential capital for farmers in the production of crops so it is possible that those engaged in agriculture sector owned more land than those outside the agriculture sector. However, the price of land varies significantly from area to area; it is quite low for land in rural and remote areas. Therefore, the amount of land owned by respondents may not be a strong indicator of household economic status.



Multivariate analyses were done further to assess how well household assets can predict per capita income or expenditure by employing a multiple linear regression. Results are shown in Table A5.4. In general, assets in both models are not strong predictors for either per capita income or expenditure; the models can predict only 15% of either per capita income or expenditure. Owning a radio, telephone, motor bike, and air conditioning are positive predictors for per capita income, while owning a bicycle and agricultural motor are negative predictors. For per capita expenditure, owning a refrigerator, radio, electric fan, and telephone are positive predictors, while owning land of 15 Rai and over and agricultural motor are negative predictors.

**Table A5. 4 Multiple linear regression models predicting per capita household cash income and expenditure**

	Per capita income	Per capita expenditure
Observation	955	955
Prob > F	0.0000	0.0000
R-square	0.1535	0.1452
Land15	101.28	-104.13*
Refrigerator	88.13	150.92**
Television	208.2	-64.63
Radio	220.14*	92.42*
Electric fan	123.75	191.11*
Telephone	672.77**	365.79**
Bicycle	-217.23**	-92.09
Motor byte	255.57**	17.62
Agriculture motor	-286.21**	-155.42**
Car	320.20	119.26
Air condition	1302.60**	650.12
Constant	385.31**	433.94**

\* Significant at  $P \leq 0.05$

\*\* significant at  $P \leq 0.01$

## A 5.5 Discussion

Consistency of data from the survey compared to the re-interview (as shown in chapter 4) suggests that errors from respondents and interviewers are limited, so the remaining problems will be due to the questionnaire itself and the definitions employed in the survey. Household expenditure of those in the first and second per capita income quintiles exceeded their income, which was consistent with survey figures, while average net income

of all per capita expenditure quintiles was positive. Both income and expenditure quintiles were quite consistent with owning various durable goods.

In light of the possible under-estimation of household income due to the inclusion of only cash income, household income data in Yasothon province from other sources were compared. According to the 2002 Socio-economic survey (SES)<sup>85</sup>, monthly household income in Yashothon was 6,045 Baht in 2002 (the same year as this study), which was the lowest in the country (mean household monthly income for the whole country was 13,736 Baht and 9,279 Baht for the Northeast region). The monthly household income from this study, 3,581 Baht, was only 59% of that from the SES. According to WHO, on average 40% of household expenditures are spent on food; therefore, it may be reasonable to assume household cash income as non-subsistence income. According to the 2002 Socio-economic Survey (SES), expenditure on food, on average, accounted for 40.4% of total monthly expenditures in Yasothon<sup>86</sup>. According to the poverty prevalence in Thailand in 2001<sup>87</sup>, the poverty line in Yasothon was 900 Baht per person per month, and 53% of people lived below the poverty line. In this study, the mean incomes of those in the first three quintiles were below the sample average and 65% of respondents had per capita income lower than 900 Baht, which is reasonably comparable to the SES.

Under-estimation of income in this study was more likely due to the operational definition of income employed rather than respondent bias. Over-reporting of income is less likely compared with expenditure; some respondents might exaggerate their expenditure in order to illustrate that they were not rich and carried a considerable burden. Because only an aggregate average monthly household expenditure was asked (not measuring actual expenditure), then if respondents who had catastrophic expenses included them in the report, a more serious misclassification would occur; they would be ranked as a rich instead of poor. In addition, the correlation between per capita income and expenditure quintiles

---

<sup>85</sup> Source: [http://www.nso.go.th/thai/stat/stat\\_23/toc\\_7/7.1-10.xls](http://www.nso.go.th/thai/stat/stat_23/toc_7/7.1-10.xls) (in Thai) accessed on 15/08/03

<sup>86</sup> Expenditure on food accounted for 46, 40, 31, 44 percent of total monthly household expenditure among those in agricultural sector, own-account workers, formal workers, and economically inactive households respectively.

<sup>87</sup> [http://poverty.nesdb.go.th/Pov\\_Incidence/Stat\\_index.htm](http://poverty.nesdb.go.th/Pov_Incidence/Stat_index.htm) (in Thai) accessed on 15/08/03

was not substantial; this suggests that misclassification of both approaches existed. However, policy implications according to misclassification from rich to poor (income based measure) or poor to rich (expenditure based measure) are quite different. For example, employing an expenditure-based measure, the poor who experienced high expenses which were catastrophic for them might be misclassified as rich. A smaller gradient of out-of-pocket spending would be expected if an expenditure measure was employed, since the expenditure gap between the rich and the poor was smaller than that of the income measure.

Another problem arose from assuming cash income as non-subsistence income; it might overestimate income of those in the formal sector, i.e. the richer groups. Cash income reported by those outside the agricultural sector might represent their total actual income. If this was true, it would have widened the gradient of out-of-pocket expenditure between the rich and the poor.

## **A 5.6 Conclusion**

Measuring income and expenditure is difficult for both theoretical and practical reasons, especially in developing and transitional economies where the majority of people are in the agriculture sector and family enterprises, in addition to an ineffective taxation and accounting system. The various problems and limitations in measuring income and expenditure in this study were due to the limited comprehensiveness of the questionnaire design and measurement. Time and budget constraints were other factors of concern in designing the questionnaire, in addition to various objectives of the study. Even though there was no clear evidence to indicate whether income or expenditure is superior, household income was measured more comprehensively than expenditure; in addition, the study aims to assess household ability to pay for health care. Therefore, household income was chosen to represent household economic status; however, interpretation of the results in relation to household economic status should be done with caution and keep in mind its limitations, in particular issues related to the problems of underestimation or overestimation of income.

## References

- Andersen, R. (1995) Revisiting the Behavioral Model and Access to Medical Care: Does It Matter? *Journal of Health and Social Behavior*, **36**, 1-10.
- Casley, D. J. and Lury, D. A. (1987) *Data Collection in Developing Countries*. Clarendon, Oxford.
- Cheng, Y. H., Chi, I., Boey, K. W., Ko, L. S. F., et al. (2002) Self-rated economic condition and the health of elderly persons in Hong Kong. *Social Science & Medicine*, **55**, 1415-1424.
- Deaton, A. (1997) *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*. Johns Hopkins University Press, Baltimore, MD.
- Deaton, A. and Grosh, M. (2000) Consumption in (Grosh, M. and Glowwe, P.) *Designing household survey questionnaires for developing countries: lessons from 15 years of the Living Standard Measurement study*.<sup>1</sup> World Bank, Washington, D.C.
- Deaton, A. and Paxson, C. (1998) Economies of Scale, Household Size, and the Demand for Food. *Journal of Political Economy*, **106**, 897-930.
- Ferguson, B., Tandon, A., Gakidou, E. and Murray, C. J. L. (2002) Estimating Permanent Income Using Indicator Variables. World Health Organization, Geneva.
- Filmer, D. and Pritchett, L. (1998) Estimating Wealth Effects without Expenditure Data - or Tears: An Application to Educational Enrollments in States of India. World Bank, Washington D.C.
- Inserra, A. (1996) A review of approaches for measurement of microenterprise and household income. Management System International, Washington, D.C.
- Johnson, M., McKay, A. D. and Round, J. I. (1990) Income and Expenditure in a System of Household Accounts: Concepts and Estimation. World Bank, Washington D.C.

- Knodel, J., Chayovan, N., Graiurapong, S. and Suraratdecha, C. (1999) Aging in Thailand: An Overview of Formal and Informal Support. Population Studies Center, University of Michigan, Ann Arbor.
- McKay, A. (2000) Should the Survey Measure Total Household Income in (Grosh, M. and Glowwe, P.) *Designing household survey questionnaires for developing countries: lessons from 15 years of the Living Standard Measurement Study*.1 World Bank, Washington D.C.
- Ravallion, M. and Lokshin, M. (2000) Identifying Welfare Effects from Subjective Questions. World Bank, Washington D.C.
- Stewart, J. (2002) Economic status.  
<http://www.macses.ucsf.edu/Research/Social%20Environment/notebook/economic.html> access date: 19/02/2004
- Ullah, P. (1990) The association between income financial strain and psychological well-being among unemployed youths. *journal of Occupational Psychology*, **63**, 317-330.
- UN (1989) Household Income and Expenditure Survey. United Nations, New York.
- WHO (2000) *The World Health Report 2000: Health System: Improving Performance*. World Health Organization, Geneva.
- Wilkinson, R. (1996) *Unhealthy societies: The Affliction of inequality*. London New York Routledge, London.

## APPENDIX 6: SERVICE UTILIZATION

**Table A6. 1 Individual characteristics by area of residence**

	Urban	Rural	Total
N	453	503	956
Sex (%)			
Female	68	64	65
Male	32	36	35
Age group (%)			
60-69	52	53	53
70 and above	48	47	47
Marital status (%)			
Unmarried	53	47	48
Married	47	53	52
Education (%)			
none or < primary	11	10	10
Primary and above	89	90	90
Income quintile of total population**			
1	14	22	20
2	9	22	20
3	22	20	20
4	24	19	20
5	32	17	20

\*\* Significant at  $P \leq 0.01$

**Table A6. 2 Individual Characteristics according to age groups**

Age group	60-69	70+	Total
<b>N</b>	508	448	956
<b>Sex (%)</b>			
Female	66	64	65
Male	34	36	35
<b>Marital status (%)**</b>			
Unmarried	41	57	48
Married	59	43	52
<b>Education (%)**</b>			
None or <primary	6	15	10
Primary and above	94	85	90
<b>Income quintile of total population</b>			
1	18	23	20
2	18	22	20
3	22	18	20
4	20	20	20
5	22	18	20

\*\* Significant at  $P \leq 0.01$

**Table A6. 3 Living arrangements by area of residence**

	Urban	Rural	Total
N	453	503	956
Average household member	3.99	4.02	4.02
Living arrangements (%)			
Alone	9	5	6
Spouse	10	10	10
Family	79	83	82
relative and other	2	3	3
Householder (%)			
Respondent	70	73	72
Spouse	16	18	18
Child	11	8	8
relative and others	3	2	2
Breadwinner (%)			
Respondent	32	33	33
Spouse	11	13	13
Child	55	51	52
relative and others	2	2	2

**Table A6. 4 living arrangements by age group**

Age group	60-69	70+	Total
N	508	448	956
Average household member	3.96	4.09	4.02
Living arrangements (%)**			
Alone	6	5	6
Spouse	12	7	10
Family	80	84	82
relative and other	2	4	3
Householder (%)**			
Respondent	73	71	72
Spouse	21	13	18
Child	4	13	8
Relative and others	2	3	2
Breadwinner (%)**			
Respondent	42	24	33
Spouse	16	8	13
Child	40	66	52
Relative and others	2	3	2

\*\* Significant different at  $P \leq .01$



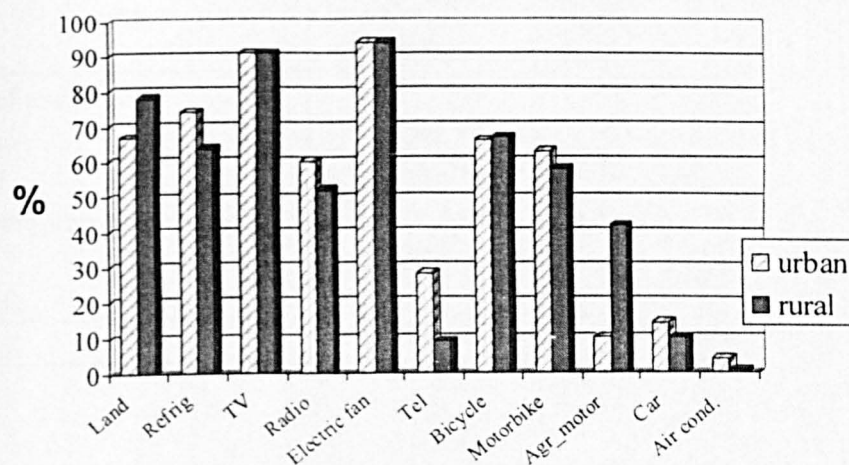
**Table A6. 5 Economic conditions by area of residence**

	Urban	Rural	Total
<b>N</b>	453	503	956
<b>Working (%)</b>	32	35	34
Average received per month in Baht	1,979	1064	1230
<b>Receiving money from children (%)</b>	72	68	68
Average received per month in Baht	1,097	955	985
<b>Receiving welfare allowances (%)</b>	13	11	11
Average received per month in Baht	293	297	296
<b>Household income and expenditure (in Baht, 2002 price)</b>			
<b>N</b>	447	500	947
Mean household monthly income	4,960	3,227	3,565
Mean household monthly expenditure	3,267	2,045	2,283
Mean per capita household monthly income	1,290	858	941

\*\* Significant different at  $P \leq .01$ **Table A6. 6 Percentage of respondents receiving income from different sources**

Age group	60-69	70+	Total
<b>N</b>	508	448	956
<b>Working (%)*</b>	46	21	34
<b>Receiving money from children (%)</b>	70	67	68
<b>Receiving welfare allowances (%)*</b>	5	19	11

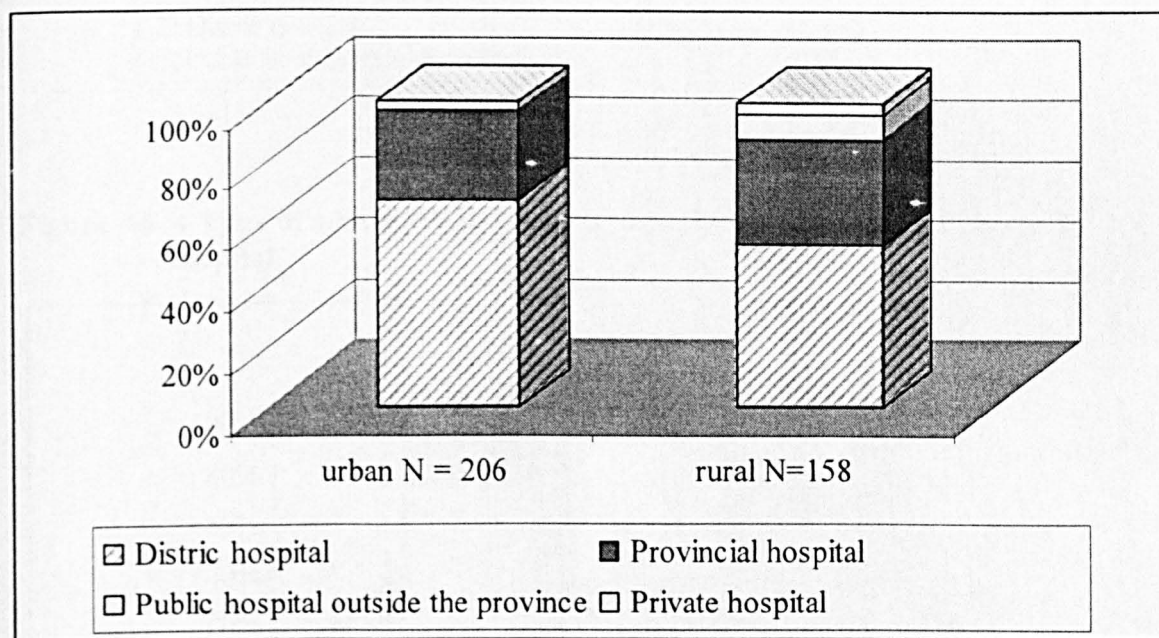
\* Significant different at  $P \leq .05$

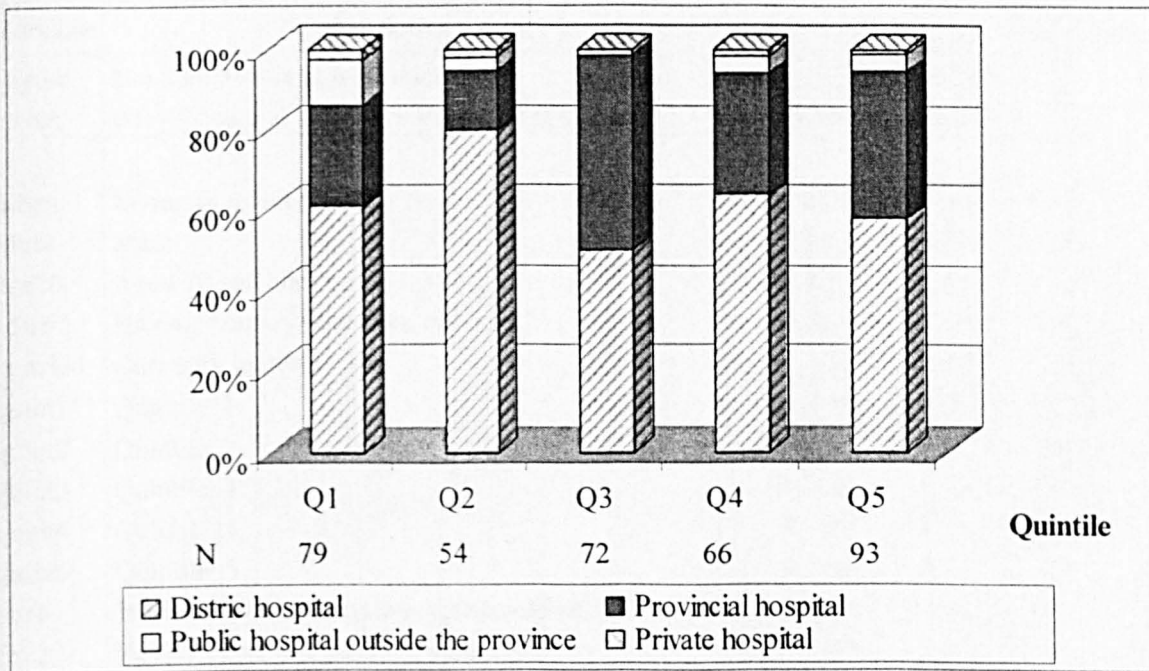
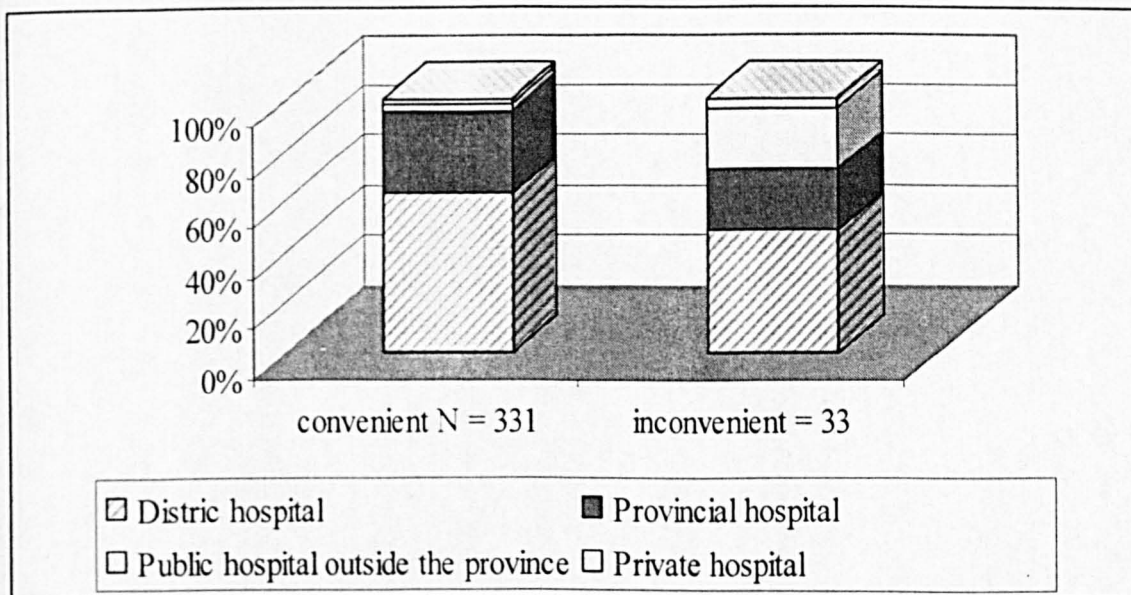
**Figure A6. 1 Owning of assets and durable goods by area of residence****Table A6. 7 Percentage of disease categories in previous month**

	Urban	Rural	Total
1. Musculoskeletal system	20.2	24.2	23.5
2. Non-specific conditions	15.2	18.7	18.0
3. Infectious diseases	10.7	12.7	12.3
4. Injury and accident	9.8	10.2	10.1
5. Gastrointestinal system	10.7	7.5	8.1
6. Metabolism and endocrine	7.6	8.3	8.2
7. Cardiovascular diseases	9.7	3.4	4.6
8. Psychological disorders	0.3	0.8	0.7
9. EENT (eye, ear, nose, throat, and oral cavity)	3.8	3.2	3.3
10. Skin diseases	3.3	1.6	1.9
11. Fever	2.1	3.2	2.9
12. Respiratory system	1.9	3.6	3.3
13. Genitourinary system	0.9	1.4	1.3
14. Central nervous system	0.2	0	0.4
15. Others	3.1	1.4	1.7
Total episodes	420	504	924

**Table A6. 8 Average length of stay per admission by area of residence and reporting convenient access**

area	Number of admissions	Mean	Std. Deviation
<b>Area of residence**</b>			
urban	206	3.99	3.79
rural	157	6.11	9.13
<b>Reporting convenient access</b>			
yes	331	4.85	6.87
no	32	5.50	4.96
<b>Total</b>	<b>363</b>	<b>4.91</b>	<b>6.72</b>

**Figure A6. 2 Type of admission hospital by area of residence**

**Figure A6. 3 Type of admission hospital by income quintile****Figure A6. 4 Type of admission hospital by reporting convenient access to contracted hospital**

**Table A6. 9 Dependent and independent variables for the probability of an individual having at least one ambulatory visit (model 1) or using the UC card at least once for ambulatory care in the previous month**

Variable	description	Obs	Mean	Std. Dev.	Min	Max
anyuse	Use formal care at least once	956	0.4529	0.4984	0	1
anyuc	Use UC card at least once in getting formal care	956	0.3933	0.4887	0	1
urban	Living in urban areas	956	0.4738	0.4996	0	1
Male	Male	956	0.3410	0.4743	0	1
age70	Aged 70 and above	956	0.4686	0.4993	0	1
edu1	Having primary education or above	956	0.8954	0.3062	0	1
married	Currently married	956	0.5	0.5002	0	1
quint1**	Quintile 1	956	0.1799	0.3843	0	1
quint2	Quintile 2	956	0.1611	0.3678	0	1
quint3	Quintile 3	956	0.2061	0.4047	0	1
quint4	Quintile 4	956	0.2123	0.4092	0	1
quint5	Quintile 5	956	0.2406	0.4277	0	1
chr1	Having chronic conditions without disabilities	956	0.2500	0.4332	0	1
chr2	Having chronic disabling conditions	956	0.4404	0.4967	0	1
conv_a	Reporting convenient access	956	0.9017	0.2979	0	1

\*\* baseline for comparison

**Table A6. 10 Dependent and independent variables for the number of ambulatory visits in the previous month among those accessing health facilities (model 3)**

Variable	description	Obs	Mean	Std. Dev.	Min	Max
use	Number of ambulatory visits	433	1.4734	0.8249	1	6
urban	Living in urban areas	433	0.4642	0.4993	0	1
Male	Male	433	0.2818	0.4504	0	1
age70	Aged 70 and above	433	0.4503	0.4981	0	1
edu1	Having primary education or above	433	0.8984	0.3025	0	1
married	Currently married	433	0.4919	0.5005	0	1
quint1**	Quintile 1	433	0.1940	0.3959	0	1
quint2	Quintile 2	433	0.1524	0.3598	0	1
quint3	Quintile 3	433	0.2102	0.4079	0	1
quint4	Quintile 4	433	0.2217	0.4159	0	1
quint5	Quintile 5	433	0.2217	0.4159	0	1
chr1	Having chronic conditions without disabilities	433	0.2864	0.4526	0	1
chr2	Having chronic disabling conditions	433	0.5242	0.5000	0	1
conv_a	Reporting convenient access	433	0.8799	0.3254	0	1

\*\* baseline for comparison

**Table A6. 11 Dependent and independent variables for the number of ambulatory visits covered by the UC scheme in the previous month among those using the UC card (model 4)**

Variable	description	Obs	Mean	Std. Dev.	Min	Max
uc	Number of ambulatory visits covered by the UC	376	1.4415	0.8012	1	6
urban	Living in urban areas	376	0.4734	0.5000	0	1
Male	Male	376	0.2926	0.4555	0	1
age70	Aged 70 and above	376	0.4495	0.4981	0	1
edu1	Having primary education or above	376	0.8936	0.3087	0	1
married	Currently married	376	0.4947	0.5006	0	1
quint1**	Quintile 1	376	0.2074	0.4060	0	1
quint2	Quintile 2	376	0.1569	0.3642	0	1
quint3	Quintile 3	376	0.2048	0.4041	0	1
quint4	Quintile 4	376	0.2207	0.4153	0	1
quint5	Quintile 5	376	0.2101	0.4079	0	1
chr1	Having chronic conditions without disabilities	376	0.3085	0.4625	0	1
chr2	Having chronic disabling conditions	376	0.5133	0.5005	0	1
conv_a	Reporting convenient access	376	0.8936	0.3087	0	1

\*\* baseline for comparison

**Table A6. 12 Dependent and independent variables for the probability of hospitalization (model 5) or hospitalization under the UC scheme (model 6) in the previous year**

Variable		Obs	Mean	Std. Dev.	Min	Max
admit	Hospitalization at least once	956	0.2322	0.4225	0	1
anyuc	Hospitalization covered by the UC scheme	956	0.2228	0.4163	0	1
urban	Living in urban area	956	0.4738	0.4996	0	1
male	Male	956	0.3410	0.4743	0	1
age70	Aged 70 and above	956	0.4686	0.4993	0	1
edu1	Having primary education or above	956	0.8954	0.3062	0	1
married	Currently married	956	0.5	0.5002	0	1
quint1**	Quintile 1	956	0.1799	0.3843	0	1
quint2	Quintile 2	956	0.1611	0.3678	0	1
quint3	Quintile 3	956	0.2061	0.4047	0	1
quint4	Quintile 4	956	0.2123	0.4092	0	1
quint5	Quintile 5	956	0.2406	0.4277	0	1
chr1	Having chronic conditions without disabilities	956	0.2500	0.4332	0	1
chr2	Having chronic disabling conditions	956	0.4404	0.4967	0	1
conv_a	Reporting convenient access	956	0.9017	0.2979	0	1

\*\* comparison group

**Table A6. 13 Dependent and independent variables for the number of admissions in the previous year among those being hospitalized (model 7)**

Variable		Obs	Mean	Std. Dev.	Min	Max
a40	Number of admissions	222	1.6396	1.6548	1	12
urban	Living in urban area	222	0.4865	0.5009	0	1
male	Male	222	0.2973	0.4581	0	1
age70	Aged 70 and above	222	0.5135	0.5009	0	1
edu1	Having primary education or above	222	0.8468	0.3609	0	1
married	Currently married	222	0.5135	0.5009	0	1
quint1**	Quintile 1	222	0.2387	0.4273	0	1
quint2	Quintile 2	222	0.1577	0.3652	0	1
quint3	Quintile 3	222	0.1847	0.3889	0	1
quint4	Quintile 4	222	0.1892	0.3925	0	1
quint5	Quintile 5	222	0.2297	0.4216	0	1
chr1	Having chronic conditions without disabilities	222	0.2342	0.4245	0	1
chr2	Having chronic disabling conditions	222	0.5270	0.5004	0	1
conv_a	Reporting convenient access	222	0.8829	0.3223	0	1

\*\* comparison group

**Table A6. 14 Dependent and independent variables for the number of admissions covered by the UC scheme in the previous year among those using the UC card at least once for hospitalization (model 8)**

Variable		Obs	Mean	Std. Dev.	Min	Max
uc_1	Number of admissions covered by the UC scheme	213	1.6526	1.6715	1	12
urban	Living in urban area	213	0.4930	0.5011	0	1
male	Male	213	0.2817	0.4509	0	1
age70	Aged 70 and above	213	0.5258	0.5005	0	1
edu1	Having primary education or above	213	0.8451	0.3627	0	1
married	Currently married	213	0.5070	0.5011	0	1
quint1**	Quintile 1	213	0.2347	0.4248	0	1
quint2	Quintile 2	213	0.1737	0.3798	0	1
quint3	Quintile 3	213	0.1831	0.3877	0	1
quint4	Quintile 4	213	0.1878	0.3915	0	1
quint5	Quintile 5	213	0.2207	0.4157	0	1
chr1	Having chronic conditions without disabilities	213	0.2300	0.4219	0	1
chr2	Having chronic disabling conditions	213	0.5305	0.5002	0	1
conv_a	Reporting convenient access	213	0.8873	0.3169	0	1

\*\* comparison group



## APPENDIX 7: EQUITY OF OUT-OF-POCKET PAYMENT

**Table A7. 1 Individual and household characteristics by income quintile**

	Per capita income quintile					Total
	1	2	3	4	5	
<b>Sex</b>						
% female	62	66	65	64	67	65
<b>Age group</b>						
% aged 70 and above	53	51	41	47	41	47
<b>Marital status</b>						
% currently married	48	60	55	52	43	52
<b>Education</b>						
% having primary education or above**	86	84	93	93	92	90
<b>Areas of residence***</b>						
% living in urban areas	13	9	21	24	31	20
<b>Household</b>						
Number of members	4.2	4.2	4.1	3.9	3.7	4
<b>Economic</b>						
% working **	24	34	33	43	39	35
% receiving other income***	7	2	7	7	16	8
% receiving transfer money***	62	69	84	76	77	74
-from their child***	58	58	80	72	73	68
-from public welfare**	10	18	11	9	8	11
Per capita monthly income (Baht in 2002 price)	150	342	586	1,051	2,600	944
<b>Access to registered hospital**</b>						
% reporting inconvenient access	20	9	14	12	6	12
<b>N</b>	172	154	197	203	230	956

Note: the number of respondents in each quintile was not equal due to different sample weights were given to urban and rural respondents.

\*\* Significant at  $P < 0.05$

\*\*\* Significant at  $P < 0.01$

**Table A7. 2 Mean medical expenditure on ambulatory care visits by type of care and payment method (Baht in 2002 price)**

Type of care	Take-up UC benefit			Out-of-pocket payment		
	N	Mean	Median	N	Mean	Median
Self-prescribing				156	28	10
Traditional med				11	355	50
Health centre	195	2	0	2	125	125
District hospital	332	2	0	2	120	120
Provincial hospital	67	0	0	2	415	415
Other public hospital	3	87	30	3	3,950	1,400
Clinic				87	320	190
Private hospital				15	1,221	700
Total	597	2	0	278	243	50

**Table A7. 3 Mean non-medical expenditure on ambulatory care visits by type of care and area of residence (Baht in 2002 price)**

Type of care	Urban			Rural		
	N	Mean	Median	N	Mean	Median
Self-prescribed	72	2	0	88	5	0
Traditional care	7	43	0	9	2	0
Health centre	36	15	15	161	8	0
District hospital	218	55	20	123	79	40
Provincial hospital	35	141	20	37	121	90
Other public hospital	3	3,043	630	3	583	500
Clinic	35	85	20	52	78	50
Private hospital	1	80	80	15	166	50
Total	407	74	20	488	50	20

**Table A7. 4 Mean medical expenditure on hospitalized episodes by type of hospital and payment method (Baht in 2002 price)**

Type of hospital	Take-up UC benefit			Out-of-pocket payment		
	N	Mean	Median	N	Mean	Median
District hospital	221	9	0	3	700	500
Provincial hospital	119	68	0	3	1,110	800
Other public hospital	17	23	0	2	2,725	2,725
Private hospital				5	7,860	3,800
Total	357	29	0	13	3,860	1,800

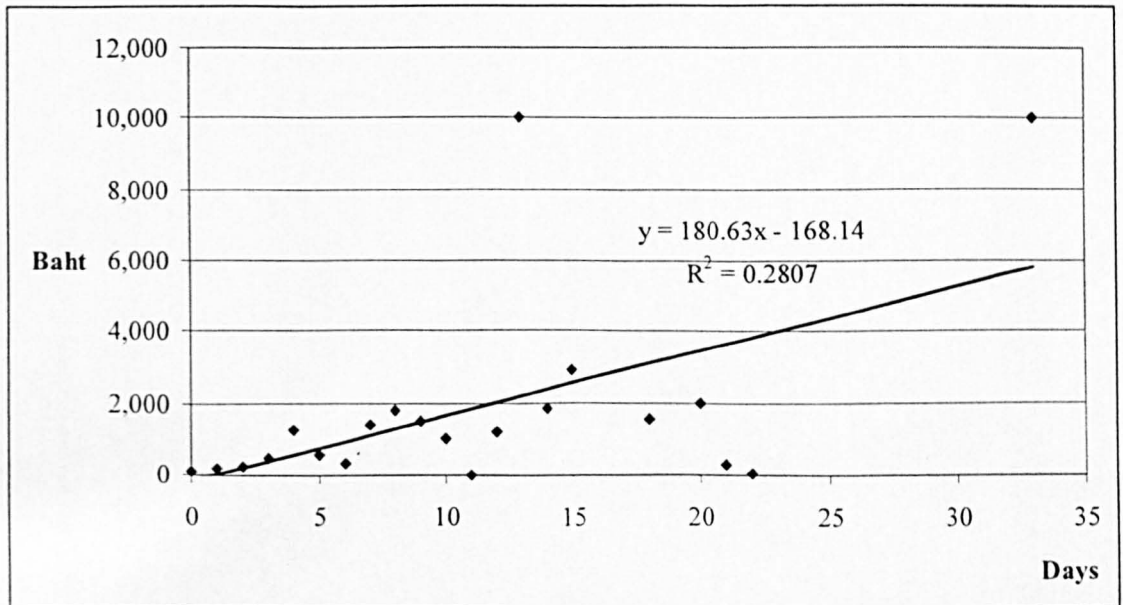
**Table A7. 5 Reasons and mean medical expenditure on ambulatory visits and admissions among those complying with the UC scheme (Baht in 2002 price)**

Paying for	Ambulatory visits			Hospitalization episodes		
	N	Mean	SD	N	Mean	SD
Service fee	3	30	0	1	30	0
Supporting hospital	5	98	87	14	132	64
Non- ED drug	4	30	12	1	167	0
Uncovered services				2	4,185	5,395
Other	4	150	164	1	30	0
Total	16	81	100	19	550	1806

**Table A7. 6 Mean non-medical expenditure on hospitalized episode by type of hospital and are of residence (Baht in 2002 price)**

Type of hospital	urban			rural		
	N	Mean	Median	N	Mean	Median
District hospital	141	268	90	86	688	300
Provincial hospital	68	1,206	500	59	920	400
Other public hospital	6	217	20	15	795	1,000
Private hospital				5	820	1,000
Average	215	563	100	165	784	340

**Figure A7. 1 Expenditure on non-medical items by length of stay**



**Figure A7. 2 Average hospital days among hospitalized individuals by income quintile**

